Groundwater Monitoring 2017 Annual Report

for Compliance with the Coal Combustion Residuals (CCR) Rule

Hayden Station

Public Service Company of Colorado

January 30, 2018

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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
TDS	Total Dissolved Solids
TSS	Total Suspended Solids

Certification

2017 Groundwater Monitoring Annual Report for Hayden Station

I hereby certify to the best of my knowledge that this groundwater monitoring 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's) 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. Hayden Station, located in Routt County, Colorado (**Figure 1**), has an ash disposal facility (unlined landfill) subject to the CCR Rule (**Figure 2**). Hayden Station is operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company.

In 2017, groundwater monitoring has been conducted at Hayden to complete collection of eight rounds of background sampling plus the first detection monitoring event (completed before October 17, 2017) as specified under CCR Rule Part 257.94. This Annual Groundwater Monitoring Report presents the sampling and analysis completed in 2015 through 2017, which includes background monitoring and the first detection monitoring event. The status of the groundwater monitoring program at the end of 2017 is in detection monitoring.

2.0 Facility Description

Hayden Station is a coal-fired, steam turbine electric generating station; the fuel source for the existing coal-fired units is sub-bituminous, low-sulfur coal supplied by several mines in western Colorado. Hayden Station uses water from the Yampa River and discharges no water offsite. Hayden Station began operating in 1965 (Unit 1), with the addition of Unit 2 in 1976. CCR generated at the Station is permanently disposed in the landfill (**Figure 2**). Wastes disposed at the landfill consist of coal ash, air emission control byproducts, water intake silt, excavation soils, and coal impurities.

2.1 Hydrogeology

The landfill is located on a west-facing hillslope that drains to Sage Creek and the alluvial aquifer (**Figure 2**). Sage Creek flows to the north. The soil underlying the landfill is colluvium consisting of silty clay or clay to a depth of 9 to 24 feet, which is underlain by shale bedrock of the Lewis Shale Formation (Walsh, 2001). The Lewis Shale Formation surface slopes down to the west/northwest toward Sage Creek (Walsh, 2001). The Lewis Shale Formation is several hundred feet thick in the area and is recognized as an aquiclude that inhibits vertical movement of water (Xcel, 2001). Eight monitoring wells were in 1984 in the vicinity of the landfill, prior to landfill construction. All wells were dry (and remained dry throughout the multi-year period in which they were monitored) with the exception of one (HD-1) in the northwest near County Road 27, which was observed to be wet at the top of bedrock. These observations indicate that the upgradient (background) hydrological condition associated with the landfill is predominantly dry colluvium. Limited groundwater may be present beneath the landfill from infiltrated precipitation flows above the bedrock contact and ultimately discharges to Sage Creek alluvial aquifer.

Within approximately 100 feet west of the landfill, the uppermost aquifer is within the alluvium of the Sage Creek valley. Monitoring wells W-1, W-2, and W-3 were drilled to a depth of 15 to 20 feet in 2001 and encountered layers of sand and gravel alternating with finer-grained layers of sand, silt and clay. These wells are monitored as part of the state program. Three additional wells (W-4, W-5, and W-6) were installed in the Sage Creek alluvium for the state monitoring program in March 2017.

A seventh well (W-7) was installed in the Sage Creek alluvium in September, 2017 as part of a hydrogeologic evaluation of the landfill. Groundwater in the alluvial aquifer is 5 to 10 feet below grade (Xcel, 2001). Groundwater present in the Sage Creek valley bottom alluvium flows to the north.

2.2 Monitoring Well Network

Four monitoring wells (MW-5, MW-6, MW-7, and MW-8) were drilled and installed in 2015 around the perimeter of the landfill and are monitored for compliance with the CCR Rule. All four wells were completed in the colluvium. The well locations are shown on **Figure 2**. The upgradient well (MW-5) is located to the southeast of the ash landfill (**Figure 2**). The three downgradient wells (MW-6, MW-7, and MW-8, see **Figure 2**) are located immediately west of the landfill. The three downgradient wells are spaced along the length of the landfill. Each downgradient well is located at the waste boundary of the CCR unit, as described in the Groundwater Monitoring System Certification (HDR, 2016).

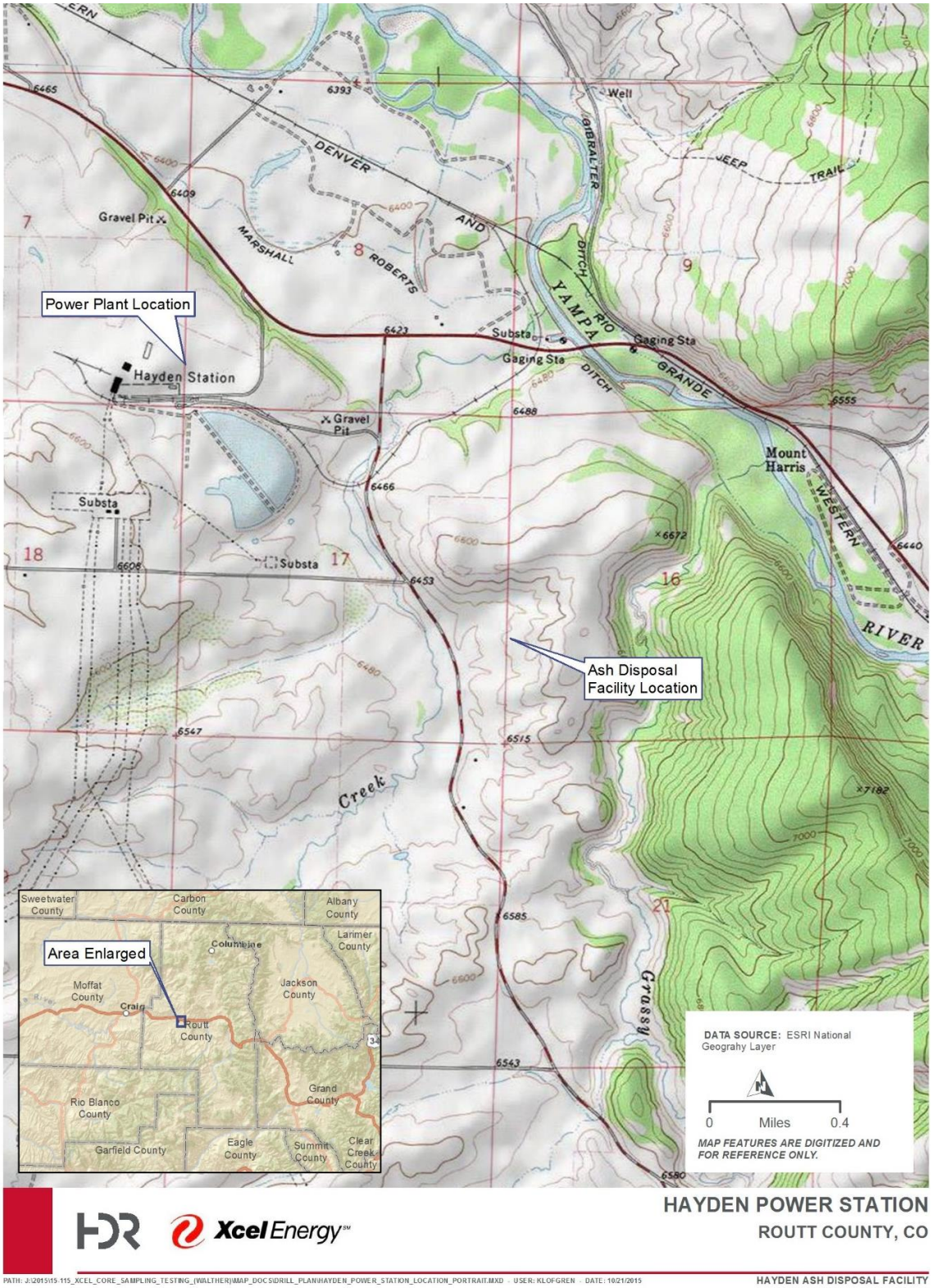


Figure 1. Vicinity map for Hayden Station.

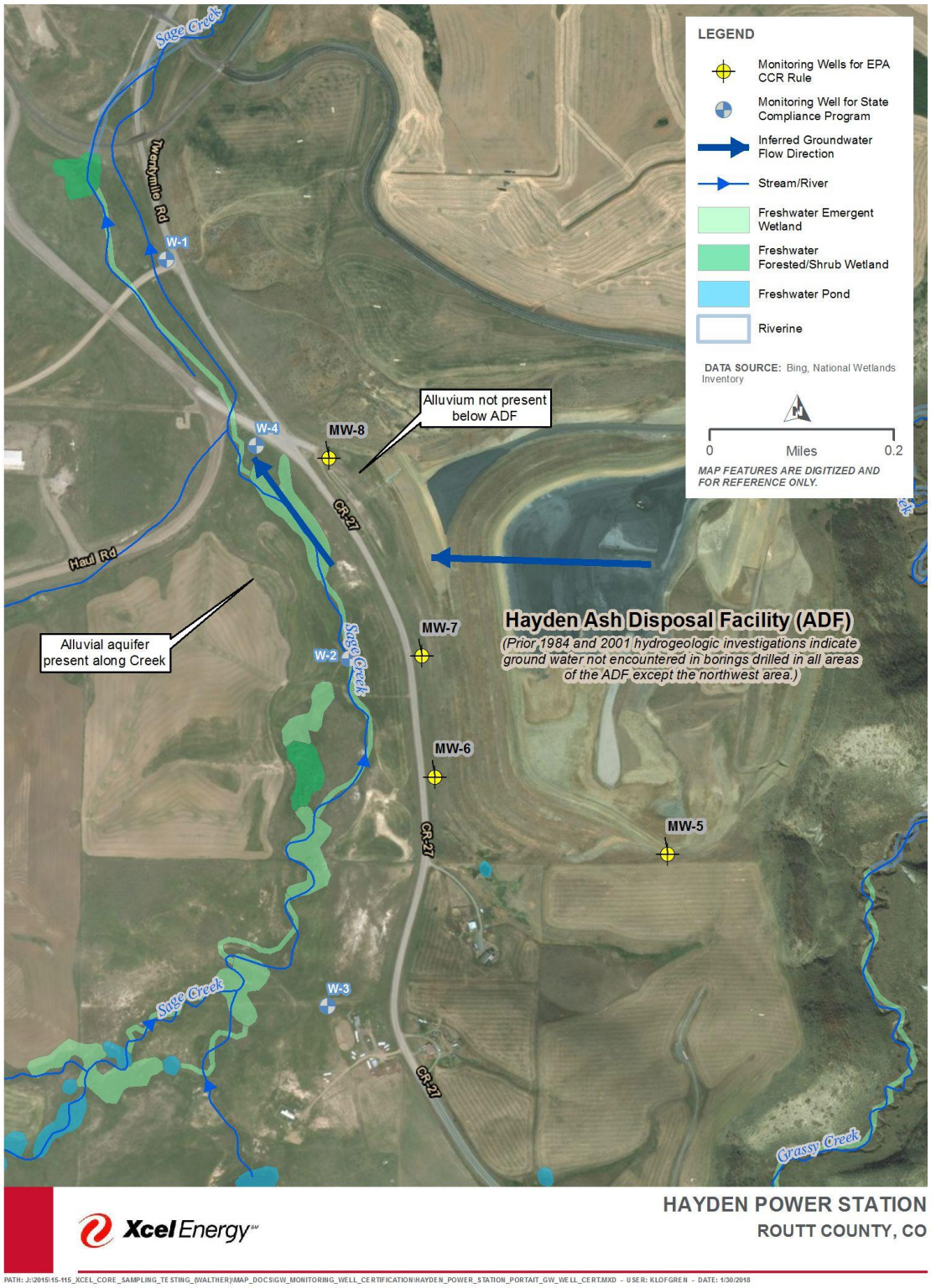


Figure 2. Hayden Station – CCR unit and monitoring well location map.

3.0 Monitoring

3.1 Frequency

As stipulated in the CCR Rule, eight rounds of background groundwater sampling were completed before October 17, 2017. Sampling was conducted on a quarterly basis, beginning in the fourth quarter 2015 and the first detection monitoring event was performed on September 18-19, 2017. **Table 1** provides the well identification, the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the program under which the sampling was required by the CCR Rule (detection monitoring, assessment monitoring).

Table 1. Number and dates of groundwater samples collected for each well and the required monitoring programs (257.90(e)(3))

Monitoring Well I.D.	Well Location	Dates Monitored	No. of Monitoring Events / No. Samples Collected	CCR Rule Monitoring Purpose
MW-5	Upgradient	December 2, 2015 March 8, 2016 May 8, 2016 August 22, 2016 November 14, 2016* March 7, 2017* May 15, 2017 July 11, 2017	8 / 0*	Background Monitoring
MW-5	Upgradient	September 19, 2017	1 / 0*	Detection Monitoring
MW-6	Downgradient	December 5, 2015 March 8, 2016 May 8, 2016 August 23, 2016* November 15, 2016 March 8, 2017 May 16, 2017* July 12, 2017*	8 / 8	Background Monitoring
MW-6	Downgradient	September 18, 2017*	1 / 1	Detection Monitoring
MW-7	Downgradient	December 5, 2015 March 9, 2016 May 8, 2016 August 23, 2016* November 15, 2016 March 8, 2017 May 16, 2017* July 12, 2017*	8 / 8*	Background Monitoring
MW-7	Downgradient	September 18, 2017	1 / 1	Detection Monitoring
MW-8	Downgradient	December 5, 2015 March 9, 2016 May 9, 2016 August 22, 2016 November 14, 2016 March 7, 2017 May 15, 2017 July 11, 2017	8 / 8	Background Monitoring
MW-8	Downgradient	September 19, 2017	1 / 1	Detection Monitoring

*Well was monitored and found to be dry, no sample could be collected

3.2 Water Levels and Sample Collection

Water levels were collected in each well prior to sample collection. Groundwater quality samples were collected in all four monitoring wells unless wells were dry. Groundwater sample collection protocols follow the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2016). The water samples were collected using a submersible Geotech SS Geosub pump, and the pump and hose were 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 (QC), 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 background sampling were analyzed for the COIs shown in **Table 2**, which include all of the parameters in Appendices III and IV of CCR Rule Part 257 for the initial eight sample events, plus Total Suspended Solids (TSS). The laboratory analyzed matrix spike/matrix spike duplicates at a rate of 5 percent, per laboratory QC procedures.

Groundwater samples for detection monitoring were analyzed for the CCR Rule Appendix III constituents shown in **Table 2.** The laboratory analyzed matrix spike/matrix spike duplicates at a rate of 5 percent, per laboratory QC procedures.

Table 2. 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

4.0 Data Validation and Data Management

Data validation was conducted to eliminate unacceptable analytical data, minimize suspect analytical data, and designate a data qualifier for any data quality limitation discovered. All 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, 2018).

All samples and 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. LCS/LCS duplicates and MS/MSD duplicates %RPD recoveries all were within control limits. Data analyses required minimal qualifications, and all data were usable, even when qualified.

5.0 Monitoring Results

The water level and water quality data from background monitoring and the first groundwater detection monitoring at Hayden are provided in this annual report. Monitoring was performed for background water quality characterization between December 2015 and July 2017 and water was analyzed for CCR Rule Appendix III and IV COIs (**Table 2**). In addition, the first detection monitoring event was performed at all four monitoring wells on September 18-19, 2017, and water was analyzed for Appendix III COIs (**Table 2**).

5.1 Water Levels and Groundwater Flow Direction

Water levels were measured in the four monitoring wells are provided in **Table 2** and displayed graphically in **Figure 3**. The upgradient monitoring well, MW-5, is located southeast of the ash landfill (**Figure 2**) and was found to be dry in all sample events. Any groundwater in the colluvium is expected to flow west to northwest given the slope of the bedrock and topography; therefore, downgradient monitoring wells to evaluate potential impacts to groundwater from the landfill are located, along the western waste boundary. The water level in these wells varies between approximately 4 and 6.5 feet through the year. Elevation in all three wells was highest in May, in response to recharge from snowmelt, and lowest in December (**Table 2** and **Figure 3**). Groundwater flow direction appears to be consistent with previous conceptual models in that groundwater flow direction is to the north between the three downgradient wells.

HDR has reviewed site conditions on multiple occasions to evaluate potential locations for a new upgradient monitoring well. Based upon the documented dry colluvium conditions, locations east of the landfill are expected to also be dry. Locations along the south end of the landfill are inappropriate due to possible stormwater runoff from the landfill and potential contributions from the adjacent property owner. Therefore, the most appropriate location for an upgradient well is along the south edge of the landfill and west of CR-27. However, a well installed west of CR-27 would likely intercept the alluvial aquifer, and would not be representative of the colluvium that is monitored in the downgradient CCR wells.

Table 3. Groundwater elevations in monitoring wells at Hayden Station

Well ID	Water Elevation (ft amsl) December 2015	Water Elevation (ft amsl) February 2016	Water Elevation (ft amsl) May 2016	Water Elevation (ft amsl) August 2016	Water Elevation (ft amsl) November 2016	Water Elevation (ft amsl) February 2017	Water Elevation (ft amsl) May 2017	Water Elevation (ft amsl) July 2017	Water Elevation (ft amsl) September 2017	Casing Elevation (ft amsl)
MW-5	dry	dry	dry	dry	dry	dry	dry	dry	dry	6617.17
MW-6	6461.83	6465.04	6468.41	6462.96	6462.41	6465.07	6464.21	6462.31	6461.71	6476.71
MW-7	6459.34	6462.08	6463.30	6460.15	6460.05	6461.50	6461.25	6459.85	6459.55	6475.00
MW-8	6444.44	6448.48	6449.37	6446.17	6444.52	6447.72	6447.52	6444.92	6443.17	6465.77

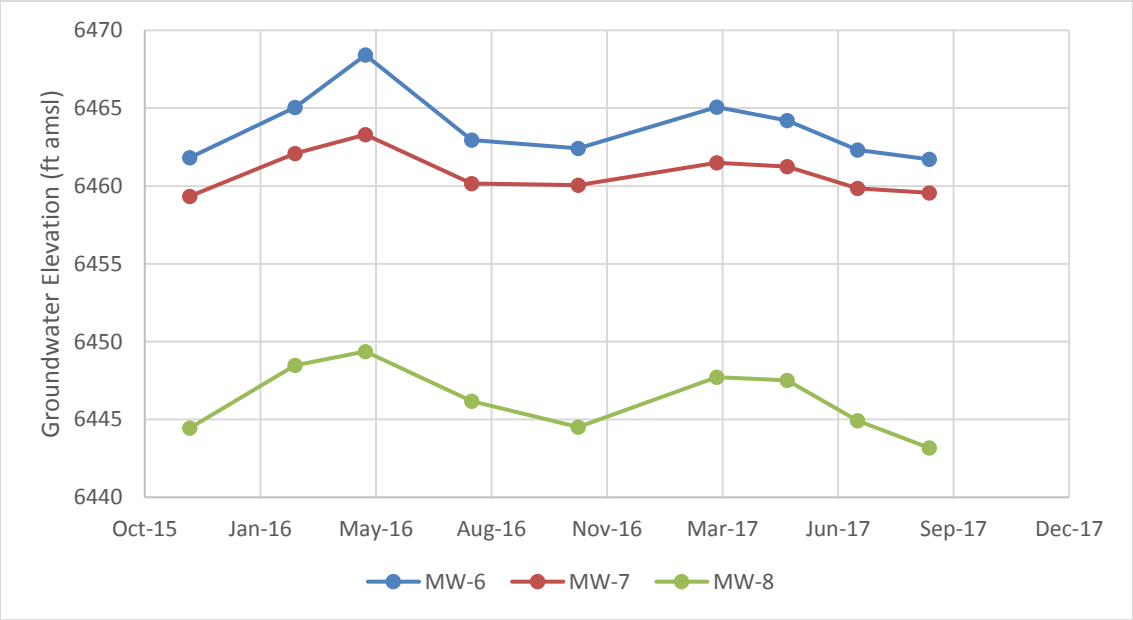


Figure 3. Groundwater elevations at wells observed each quarter.

5.2 Water Quality

The laboratory reports for the nine monitoring events completed between December 2015 and September 2017 are included in Appendix A. The CCR Rule requires background water quality be established to determine if a statistically significant increase (SSI) over background exists in downgradient wells. As discussed above, the upgradient CCR well (MW-5) has been consistently dry. Therefore, it is not possible to calculate background threshold values (BTVs) or determine whether or not there has been an SSI at downgradient wells. However, some Appendix III COIs have been observed in the downgradient wells at concentrations that indicate potential influence from the landfill. Additionally, the consistent presence of water in the downgradient wells, in otherwise dry colluvium conditions, indicates a possible source of water from the unlined landfill. For purposes of evaluating the downgradient CCR wells, inferences may be drawn from PSCo's State permitting compliance monitoring program, as discussed below; however, definitive conclusions regarding SSIs cannot be made under the CCR groundwater monitoring system.

PSCo's State permit groundwater monitoring program for the Hayden landfill requires that wells installed in the alluvium along Sage Creek upgradient and downgradient of the landfill be sampled and tested. Under the State monitoring program, background water quality for the alluvial groundwater aquifer has been established from upgradient well W-3 (**Figure 2**). An evaluation of the data from the State monitoring program has identified an SSI for dissolved phase boron in the downgradient point of compliance well (W-2) (**Figure 2**) (AECOM, 2016). No SSI was identified in downgradient well W-4, which is downgradient of W-2, indicating that the extent of elevated boron concentrations in the state program wells is limited.

Hayden Station has begun assessment monitoring under the State permit program, and in 2017 completed a hydrogeologic investigation to confirm the understanding of the geologic conditions underlying the landfill. Borings drilled through the ash encountered saturated conditions within the ash fill and additional borings were drilled to define the extent of saturated conditions. Based upon review of the data and historic landfill operations, the source of the water in the ash does not appear to be groundwater; rather it appears to be related to a former stormwater pond that was located at the contact between the perimeter of the ash and adjacent native ground. This pond held water from approximately 2005 through the end of 2012. Changes in landfill grading and operations were implemented in 2012 that eliminated this pond. The area of the former pond was filled and has remained dry since 2012. Based on the results of this investigation, Hayden Station is developing a corrective action plan in consultation with the State. Implementation of the corrective action plan will commence in 2018, along with continued assessment monitoring under the State program. The corrective action will involve point source dewatering of the ash via wells. Given the historically dry condition of the colluvium at the site, and the absence of water at the upgradient well, the site conceptual model is that water present in the saturated ash is the source of the groundwater in the downgradient CCR colluvium wells. Therefore, upon completion of corrective action, the downgradient CCR wells may go dry. In anticipation of one or more of these downgradient CCR wells going dry in the future, and due to the absence of water in the upgradient colluvium well, the wells monitored in the alluvial aquifer for the State monitoring program may ultimately represent the closest aquifer to the CCR landfill. Although not required by the CCR Rule, PSCo will begin sampling the State program alluvial monitoring wells in 2018 for CCR constituents to further inform the corrective action being implemented under the state program.

6.0 Summary

The groundwater monitoring system at the Hayden CCR landfill was installed in 2015 in compliance with the requirements of CCR Rule Part 257.91 of the CCR Rule as documented in the Groundwater Monitoring System Certification (HDR, 2016). Four wells were installed in the colluvium surrounding the CCR landfill. After completion of the initial eight rounds of sampling as specified under Section 257.94 of the rule, the upgradient well MW-5 has been consistently dry. Therefore, it is not possible to calculate BTVs or determine whether or not there has been an SSI at the downgradient CCR wells. However, under a separate State groundwater monitoring system of wells in the alluvial aquifer, SSIs over background have been identified in downgradient well W-2. PSCo initiated assessment monitoring under the State program in 2017 and is scheduled to initiate a corrective action program in 2018. Although no SSIs have been demonstrated in the CCR monitoring program, assessment monitoring and corrective action are being implemented at the site under the state program, which is functionally equivalent to that which is outlined in the CCR Rule.

Because it is anticipated that the current CCR downgradient wells may go dry, PSCo will begin monitoring the State program alluvial well network (W-1, W-2, W-3, W-4) in 2018 for CCR Rule Appendix III and IV COIs to further inform the corrective action being implemented under the state program, and develop BTVs for the CCR constituents (total metal concentrations) in the alluvial aquifer. PSCo will continue detection monitoring (CCR Rule Appendix III COI analysis) in the existing CCR network (MW-5, MW-6, MW-7, and MW-8) as long as sufficient water is available for sampling.

The following observations are based on CCR Rule compliance data collected in 2017 and prior:

- All CCR wells that make up the Certified Well Network were installed in 2015 as described in the Groundwater Monitoring System Certification (HDR, 2016).
- Groundwater flow direction under the CCR landfill is generally to the west and discharges to the Sage Creek alluvial aquifer. Groundwater flow direction in the Sage Creek alluvial aquifer is to the north.
- All four of the CCR monitoring wells that make up the Certified Well Network were sampled between December 2015 and July 2017 for background water quality, except MW-5 located upgradient of the landfill was consistently dry.
- No upgradient water quality was available to develop BTVs.
- All four of the CCR monitoring wells that make up the Certified Well Network were sampled during the September 2017 detection monitoring event, except MW-5 was dry.
- As of the end of 2017 it is not possible to evaluate the CCR wells for SSIs due to the absence of water in the upgradient well. However, based upon the status of the State groundwater monitoring program, Hayden Station is implementing assessment monitoring and corrective action that is functionally equivalent to that which would be required if there were a documented SSI in the CCR monitoring well network.
- In 2018 PSCo will initiate sampling of CCR constituents in state wells located in the alluvial aquifer.

7.0 References

AECOM, 2016. Hayden Station Ash Disposal Facility Semi-Annual Groundwater Monitoring Report December 28, 2016.

HDR, 2016. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Hayden Station. August 1, 2016.

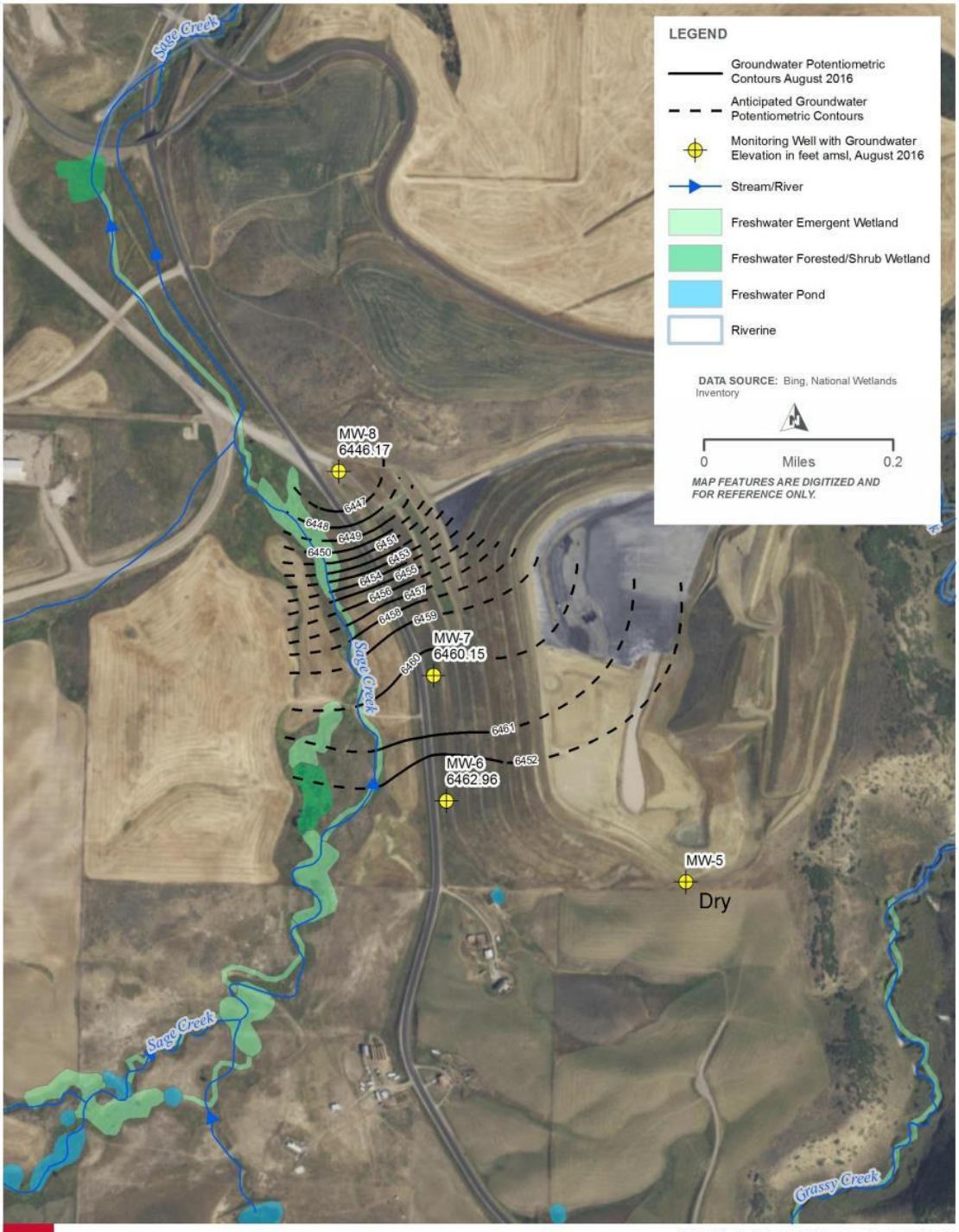
HDR, 2018. Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule. Updated January 15, 2018.

Walsh (Walsh Environmental Scientists and Engineers), 2013. Hayden Station Coal Ash Disposal Facility Engineering and Design and Operation Plan. Xcel Energy, Hayden, Colorado. November 2013.

Xcel Energy, 2001. Hayden Ash Disposal Facility Environmental Monitoring System (EMS) Work Plan, August 23, 2001.

Appendix A

Potentiometric Surface Map



Xcel Energy

HAYDEN POWER STATION

ROUTT COUNTY, CO

PATH: J:\2016\16-115_XCEL_CORE_SAMPLING_TESTING_(WALTHER)\MAP_DOCS\GROUNDWATER_CONTROURS\HAYDEN_POWER_STATION_PORTAIT_GW_WELL_CERT_GWELEV201608.MXD - USER: BHOSFORD - DATE: 10/31/2016

Appendix B

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: 280-77681-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
1/11/2016 9:15:21 AM

Stephanie Kupper, Project Manager I
(303)736-0182
stephanie.kupper@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 - Hayden

TestAmerica Job ID: 280-77681-1

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.
F3	Duplicate RPD exceeds the control limit
E	Result exceeded calibration range.

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 280-77681-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-77681-1

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 12/8/2015 at 4:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.2º C and 5.2º C.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 12/12/2015 and analyzed on 12/16/2015, 12/21/2015 and 12/22/2015.

Beryllium and Cobalt were detected in method blank MB 240-210435/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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-6 (280-77681-1)[500X], MW6D (280-77681-3)[500X], MW-7 (280-77681-4)[500X] and MW-8 (280-77681-5)[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.

TOTAL MERCURY
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 12/10/2015.

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

TOTAL DISSOLVED SOLIDS
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 12/09/2015 and 12/12/2015.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 12/10/2015 and 12/11/2015.

Job ID: 280-77681-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

CORROSIVITY (PH)
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 12/08/2015 and 12/16/2015.

pH adj. to 25 deg C exceeded the RPD limit for the duplicate of sample MW-6EB (280-77681-2). It is suspected that the probe did not have enough time to stabilize while taking the measurements.

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

ANIONS (28 DAYS)
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/16/2015 and 12/17/2015.

Chloride and Sulfate were detected in method blank MB 280-307791/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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-6 (280-77681-1)[2X], MW-6 (280-77681-1)[20X], MW6D (280-77681-3)[2X], MW6D (280-77681-3)[20X], MW-7 (280-77681-4)[2X], MW-7 (280-77681-4)[20X], MW-8 (280-77681-5)[2X] and MW-8 (280-77681-5)[50X] 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-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 12/15/2015 and analyzed on 01/06/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4), MW-8 (280-77681-5).

The following samples were prepared at a reduced aliquot because the sample bottle was not completely full: MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4), MW-8 (280-77681-5).

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

RADIUM-228
Samples MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 12/15/2015 and analyzed on 01/05/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4), MW-8 (280-77681-5).

The following samples were prepared at a reduced aliquot because the sample bottle was not completely full: MW-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4), MW-8 (280-77681-5).

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-6 (280-77681-1), MW-6EB (280-77681-2), MW6D (280-77681-3), MW-7 (280-77681-4) and MW-8 (280-77681-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 01/07/2016.

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 - Hayden

TestAmerica Job ID: 280-77681-1

Client Sample ID: MW-6 — Lab Sample ID: 280-77681-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00050	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0021	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.015		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00043	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	47		10	5.5	mg/L	500		6020A	Total Recoverable
Cadmium	0.00019	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	430		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.0011	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00058	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00017	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	1.5		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00024	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.44	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	70	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.30	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3300	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4700		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-6EB — Lab Sample ID: 280-77681-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.00023	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Cadmium	0.000089	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Cobalt	0.000051	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Thallium	0.000079	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	5.68	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.4	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Fluoride	0.14	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1.1	J B	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-77681-1

Client Sample ID: MW6D — Lab Sample ID: 280-77681-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00024	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0022	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.016		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00024	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	50		10	5.5	mg/L	500		6020A	Total Recoverable
Calcium	470		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00050	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.13		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	1.6		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.017		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00010	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.44	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	70	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.33	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3200	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4700		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	5.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-77681-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00022	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0010	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.0077		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00019	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	52		10	5.5	mg/L	500		6020A	Total Recoverable
Calcium	440		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.00013	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00019	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.27		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	1.0		0.010	0.00023	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 - Hayden

TestAmerica Job ID: 280-77681-1

Client Sample ID: MW-7 (Continued) — Lab Sample ID: 280-77681-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.012		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.000077	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.79	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	22.6	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	110	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.20	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3200	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4800		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	9.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-77681-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0029	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.010		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00017	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	0.86	B	0.20	0.11	mg/L	10		6020A	Total Recoverable
Cadmium	0.00011	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	550		10	2.4	mg/L	10		6020A	Total Recoverable
Chromium	0.0013	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00041	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00017	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.67		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0034	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.047		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.39	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	22.4	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	220	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.14	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4900		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8500		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	12		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 - Hayden

TestAmerica Job ID: 280-77681-1

Method	Method Description	Protocol	Laboratory
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

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 - Hayden

TestAmerica Job ID: 280-77681-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-77681-1	MW-6	Ground Water	12/05/15 13:00	12/08/15 16:30
280-77681-2	MW-6EB	Water	12/05/15 13:00	12/08/15 16:30
280-77681-3	MW6D	Water	12/05/15 13:00	12/08/15 16:30
280-77681-4	MW-7	Ground Water	12/06/15 13:30	12/08/15 16:30
280-77681-5	MW-8	Ground Water	12/06/15 11:35	12/08/15 16:30

Client Sample Results

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

TestAmerica Job ID: 280-77681-1

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

Client Sample ID: MW-6
Date Collected: 12/05/15 13:00
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00050	J	0.0020	0.00016	mg/L		12/12/15 10:41	12/16/15 12:07	1
Arsenic	0.0021	J	0.0050	0.00049	mg/L		12/12/15 10:41	12/16/15 12:07	1
Barium	0.015		0.0050	0.0011	mg/L		12/12/15 10:41	12/16/15 12:07	1
Beryllium	0.00043	J B	0.0010	0.000053	mg/L		12/12/15 10:41	12/16/15 12:07	1
Boron	47		10	5.5	mg/L		12/12/15 10:41	12/21/15 16:12	500
Cadmium	0.00019	J	0.0010	0.000061	mg/L		12/12/15 10:41	12/16/15 12:07	1
Calcium	430		1.0	0.24	mg/L		12/12/15 10:41	12/16/15 12:07	1
Chromium	0.0011	J	0.0020	0.00060	mg/L		12/12/15 10:41	12/16/15 12:07	1
Cobalt	0.00058	J B	0.0010	0.000021	mg/L		12/12/15 10:41	12/16/15 12:07	1
Lead	0.00017	J	0.0010	0.00011	mg/L		12/12/15 10:41	12/16/15 12:07	1
Lithium	0.12		0.0080	0.00029	mg/L		12/12/15 10:41	12/16/15 12:07	1
Molybdenum	1.5		0.010	0.00023	mg/L		12/12/15 10:41	12/16/15 12:07	1
Selenium	0.015		0.0050	0.00025	mg/L		12/12/15 10:41	12/16/15 12:07	1
Thallium	0.00024	J	0.0010	0.000074	mg/L		12/12/15 10:41	12/16/15 12:07	1

Client Sample ID: MW-6EB
Date Collected: 12/05/15 13:00
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		12/12/15 10:41	12/16/15 12:11	1
Arsenic	ND		0.0050	0.00049	mg/L		12/12/15 10:41	12/16/15 12:11	1
Barium	ND		0.0050	0.0011	mg/L		12/12/15 10:41	12/16/15 12:11	1
Beryllium	0.00023	J B	0.0010	0.000053	mg/L		12/12/15 10:41	12/16/15 12:11	1
Boron	ND		0.020	0.011	mg/L		12/12/15 10:41	12/22/15 13:20	1
Cadmium	0.000089	J	0.0010	0.000061	mg/L		12/12/15 10:41	12/16/15 12:11	1
Calcium	ND		1.0	0.24	mg/L		12/12/15 10:41	12/16/15 12:11	1
Chromium	ND		0.0020	0.00060	mg/L		12/12/15 10:41	12/16/15 12:11	1
Cobalt	0.000051	J B	0.0010	0.000021	mg/L		12/12/15 10:41	12/16/15 12:11	1
Lead	ND		0.0010	0.00011	mg/L		12/12/15 10:41	12/16/15 12:11	1
Lithium	ND		0.0080	0.00029	mg/L		12/12/15 10:41	12/16/15 12:11	1
Molybdenum	0.0015	J	0.010	0.00023	mg/L		12/12/15 10:41	12/16/15 12:11	1
Selenium	ND		0.0050	0.00025	mg/L		12/12/15 10:41	12/16/15 12:11	1
Thallium	0.000079	J	0.0010	0.000074	mg/L		12/12/15 10:41	12/16/15 12:11	1

Client Sample ID: MW6D
Date Collected: 12/05/15 13:00
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00024	J	0.0020	0.00016	mg/L		12/12/15 10:41	12/16/15 12:15	1
Arsenic	0.0022	J	0.0050	0.00049	mg/L		12/12/15 10:41	12/16/15 12:15	1
Barium	0.016		0.0050	0.0011	mg/L		12/12/15 10:41	12/16/15 12:15	1
Beryllium	0.00024	J B	0.0010	0.000053	mg/L		12/12/15 10:41	12/16/15 12:15	1
Boron	50		10	5.5	mg/L		12/12/15 10:41	12/21/15 16:20	500
Cadmium	ND		0.0010	0.000061	mg/L		12/12/15 10:41	12/16/15 12:15	1
Calcium	470		1.0	0.24	mg/L		12/12/15 10:41	12/16/15 12:15	1
Chromium	0.0013	J	0.0020	0.00060	mg/L		12/12/15 10:41	12/16/15 12:15	1
Cobalt	0.00050	J B	0.0010	0.000021	mg/L		12/12/15 10:41	12/16/15 12:15	1
Lead	ND		0.0010	0.00011	mg/L		12/12/15 10:41	12/16/15 12:15	1
Lithium	0.13		0.0080	0.00029	mg/L		12/12/15 10:41	12/16/15 12:15	1
Molybdenum	1.6		0.010	0.00023	mg/L		12/12/15 10:41	12/16/15 12:15	1

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

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	0.017		0.0050	0.00025	mg/L		12/12/15 10:41	12/16/15 12:15	1
Thallium	0.00010	J	0.0010	0.000074	mg/L		12/12/15 10:41	12/16/15 12:15	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-77681-4**
Date Collected: 12/06/15 13:30 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00022	J	0.0020	0.00016	mg/L		12/12/15 10:41	12/16/15 12:19	1
Arsenic	0.0010	J	0.0050	0.00049	mg/L		12/12/15 10:41	12/16/15 12:19	1
Barium	0.0077		0.0050	0.0011	mg/L		12/12/15 10:41	12/16/15 12:19	1
Beryllium	0.00019	J B	0.0010	0.000053	mg/L		12/12/15 10:41	12/16/15 12:19	1
Boron	52		10	5.5	mg/L		12/12/15 10:41	12/21/15 16:24	500
Cadmium	ND		0.0010	0.000061	mg/L		12/12/15 10:41	12/16/15 12:19	1
Calcium	440		1.0	0.24	mg/L		12/12/15 10:41	12/16/15 12:19	1
Chromium	ND		0.0020	0.00060	mg/L		12/12/15 10:41	12/16/15 12:19	1
Cobalt	0.00013	J B	0.0010	0.000021	mg/L		12/12/15 10:41	12/16/15 12:19	1
Lead	0.00019	J	0.0010	0.00011	mg/L		12/12/15 10:41	12/16/15 12:19	1
Lithium	0.27		0.0080	0.00029	mg/L		12/12/15 10:41	12/16/15 12:19	1
Molybdenum	1.0		0.010	0.00023	mg/L		12/12/15 10:41	12/16/15 12:19	1
Selenium	0.012		0.0050	0.00025	mg/L		12/12/15 10:41	12/16/15 12:19	1
Thallium	0.000077	J	0.0010	0.000074	mg/L		12/12/15 10:41	12/16/15 12:19	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-77681-5**
Date Collected: 12/06/15 11:35 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		12/12/15 10:41	12/16/15 12:23	1
Arsenic	0.0029	J	0.0050	0.00049	mg/L		12/12/15 10:41	12/16/15 12:23	1
Barium	0.010		0.0050	0.0011	mg/L		12/12/15 10:41	12/16/15 12:23	1
Beryllium	0.00017	J B	0.0010	0.000053	mg/L		12/12/15 10:41	12/16/15 12:23	1
Boron	0.86	B	0.20	0.11	mg/L		12/12/15 10:41	12/21/15 16:28	10
Cadmium	0.00011	J	0.0010	0.000061	mg/L		12/12/15 10:41	12/16/15 12:23	1
Calcium	550		10	2.4	mg/L		12/12/15 10:41	12/21/15 16:28	10
Chromium	0.0013	J	0.0020	0.00060	mg/L		12/12/15 10:41	12/16/15 12:23	1
Cobalt	0.00041	J B	0.0010	0.000021	mg/L		12/12/15 10:41	12/16/15 12:23	1
Lead	0.00017	J	0.0010	0.00011	mg/L		12/12/15 10:41	12/16/15 12:23	1
Lithium	0.67		0.0080	0.00029	mg/L		12/12/15 10:41	12/16/15 12:23	1
Molybdenum	0.0034	J	0.010	0.00023	mg/L		12/12/15 10:41	12/16/15 12:23	1
Selenium	0.047		0.0050	0.00025	mg/L		12/12/15 10:41	12/16/15 12:23	1
Thallium	ND		0.0010	0.000074	mg/L		12/12/15 10:41	12/16/15 12:23	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-77681-1**
Date Collected: 12/05/15 13:00 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/10/15 10:20	12/10/15 15:24	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6EB — **Lab Sample ID: 280-77681-2**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/10/15 10:20	12/10/15 15:30	1

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/10/15 10:20	12/10/15 15:37	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-77681-4**
Date Collected: 12/06/15 13:30 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/10/15 10:20	12/10/15 15:40	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-77681-5**
Date Collected: 12/06/15 11:35 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/10/15 10:20	12/10/15 15:42	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-77681-1**
Date Collected: 12/05/15 13:00 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.44	HF	0.100	0.100	SU			12/08/15 22:16	1
Temperature	22.3	HF	1.00	1.00	Degrees C			12/08/15 22:16	1
Chloride	70	B	6.0	0.51	mg/L			12/16/15 01:47	2
Fluoride	0.30	J	1.0	0.12	mg/L			12/16/15 01:47	2
Sulfate	3300	B	100	4.6	mg/L			12/16/15 02:04	20
Total Dissolved Solids (TDS)	4700		40	19	mg/L			12/12/15 12:31	1
Total Suspended Solids	4.0		4.0	1.1	mg/L			12/10/15 16:03	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-77681-2**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.68	HF	0.100	0.100	SU			12/16/15 21:25	1
Temperature	21.4	HF	1.00	1.00	Degrees C			12/16/15 21:25	1
Chloride	ND		3.0	0.25	mg/L			12/16/15 02:21	1
Fluoride	0.14	J	0.50	0.060	mg/L			12/16/15 02:21	1
Sulfate	1.1	J B	5.0	0.23	mg/L			12/16/15 02:21	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/09/15 16:34	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/10/15 16:03	1

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.44	HF	0.100	0.100	SU			12/08/15 22:12	1

General Chemistry (Continued)

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	22.3	HF	1.00	1.00	Degrees C			12/08/15 22:12	1
Chloride	70	B	6.0	0.51	mg/L			12/16/15 03:11	2
Fluoride	0.33	J	1.0	0.12	mg/L			12/16/15 03:11	2
Sulfate	3200	B	100	4.6	mg/L			12/16/15 03:28	20
Total Dissolved Solids (TDS)	4700		40	19	mg/L			12/12/15 12:31	1
Total Suspended Solids	5.6		4.0	1.1	mg/L			12/10/15 16:03	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-77681-4**
Date Collected: 12/06/15 13:30 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.79	HF	0.100	0.100	SU			12/08/15 22:09	1
Temperature	22.6	HF	1.00	1.00	Degrees C			12/08/15 22:09	1
Chloride	110	B	6.0	0.51	mg/L			12/16/15 03:45	2
Fluoride	0.20	J	1.0	0.12	mg/L			12/16/15 03:45	2
Sulfate	3200	B	100	4.6	mg/L			12/16/15 04:02	20
Total Dissolved Solids (TDS)	4800		40	19	mg/L			12/12/15 12:31	1
Total Suspended Solids	9.2		4.0	1.1	mg/L			12/11/15 14:52	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-77681-5**
Date Collected: 12/06/15 11:35 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.39	HF	0.100	0.100	SU			12/08/15 22:21	1
Temperature	22.4	HF	1.00	1.00	Degrees C			12/08/15 22:21	1
Chloride	220	B	6.0	0.51	mg/L			12/16/15 04:19	2
Fluoride	0.14	J	1.0	0.12	mg/L			12/16/15 04:19	2
Sulfate	4900		250	12	mg/L			12/17/15 20:22	50
Total Dissolved Solids (TDS)	8500		100	47	mg/L			12/12/15 12:31	1
Total Suspended Solids	12		4.0	1.1	mg/L			12/11/15 14:52	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-77681-1**
Date Collected: 12/05/15 13:00 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0638	U	0.142	0.143	1.00	0.250	pCi/L	12/15/15 12:45	01/06/16 07:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*12/15/15 12:45*	*01/06/16 07:17*	*1*

Client Sample ID: MW-6EB — **Lab Sample ID: 280-77681-2**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0533	U	0.150	0.150	1.00	0.266	pCi/L	12/15/15 12:45	01/06/16 07:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.0		40 - 110	12/15/15 12:45	01/06/16 07:17	1

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.254		0.164	0.166	1.00	0.226	pCi/L	12/15/15 12:45	01/06/16 07:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	67.2		40 - 110	12/15/15 12:45	01/06/16 07:17	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-77681-4**
Date Collected: 12/06/15 13:30 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0601	U	0.0909	0.0911	1.00	0.156	pCi/L	12/15/15 12:45	01/06/16 07:18	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	12/15/15 12:45	01/06/16 07:18	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-77681-5**
Date Collected: 12/06/15 11:35 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.315		0.178	0.180	1.00	0.232	pCi/L	12/15/15 12:45	01/06/16 07:19	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	62.0		40 - 110	12/15/15 12:45	01/06/16 07:19	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-77681-1**
Date Collected: 12/05/15 13:00 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.432	U	0.293	0.295	1.00	0.455	pCi/L	12/15/15 16:20	01/05/16 13:44	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	12/15/15 16:20	01/05/16 13:44	1
Y Carrier	74.0		40 - 110	12/15/15 16:20	01/05/16 13:44	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-77681-2**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.271	U	0.297	0.298	1.00	0.487	pCi/L	12/15/15 16:20	01/05/16 13:44	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.0		40 - 110	12/15/15 16:20	01/05/16 13:44	1
Y Carrier	69.9		40 - 110	12/15/15 16:20	01/05/16 13:44	1

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.399	U	0.359	0.361	1.00	0.579	pCi/L	12/15/15 16:20	01/05/16 13:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	75.1		40 - 110	12/15/15 16:20	01/05/16 13:45	1
Y Carrier	85.6		40 - 110	12/15/15 16:20	01/05/16 13:45	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-77681-4**
Date Collected: 12/06/15 13:30 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.104	U	0.233	0.233	1.00	0.398	pCi/L	12/15/15 16:20	01/05/16 13:46	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	12/15/15 16:20	01/05/16 13:46	1
Y Carrier	86.0		40 - 110	12/15/15 16:20	01/05/16 13:46	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-77681-5**
Date Collected: 12/06/15 11:35 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.257	U	0.365	0.365	1.00	0.610	pCi/L	12/15/15 16:20	01/05/16 13:46	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	62.0		40 - 110	12/15/15 16:20	01/05/16 13:46	1
Y Carrier	86.4		40 - 110	12/15/15 16:20	01/05/16 13:46	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-77681-1**
Date Collected: 12/05/15 13:00 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.495**		0.325	0.328	5.00	0.455	pCi/L		01/07/16 18:07	1

Client Sample Results

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

TestAmerica Job ID: 280-77681-1

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

Client Sample ID: MW-6EB — **Lab Sample ID: 280-77681-2**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.324	U	0.333	0.334	5.00	0.487	pCi/L		01/07/16 18:07	1

Client Sample ID: MW6D — **Lab Sample ID: 280-77681-3**
Date Collected: 12/05/15 13:00 — **Matrix: Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.653**		0.395	0.398	5.00	0.579	pCi/L		01/07/16 18:07	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-77681-4**
Date Collected: 12/06/15 13:30 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.164	U	0.250	0.250	5.00	0.398	pCi/L		01/07/16 18:07	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-77681-5**
Date Collected: 12/06/15 11:35 — **Matrix: Ground Water**
Date Received: 12/08/15 16:30

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.572	U	0.406	0.407	5.00	0.610	pCi/L		01/07/16 18:07	1

QC Sample Results

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

TestAmerica Job ID: 280-77681-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-210435/1-A
Matrix: Water
Analysis Batch: 211279

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 210435

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		12/12/15 10:41	12/16/15 11:59	1
Arsenic	ND		0.0050	0.00049	mg/L		12/12/15 10:41	12/16/15 11:59	1
Barium	ND		0.0050	0.0011	mg/L		12/12/15 10:41	12/16/15 11:59	1
Beryllium	0.000115	J	0.0010	0.000053	mg/L		12/12/15 10:41	12/16/15 11:59	1
Cadmium	ND		0.0010	0.000061	mg/L		12/12/15 10:41	12/16/15 11:59	1
Calcium	ND		1.0	0.24	mg/L		12/12/15 10:41	12/16/15 11:59	1
Chromium	ND		0.0020	0.00060	mg/L		12/12/15 10:41	12/16/15 11:59	1
Cobalt	0.0000250	J	0.0010	0.000021	mg/L		12/12/15 10:41	12/16/15 11:59	1
Lead	ND		0.0010	0.00011	mg/L		12/12/15 10:41	12/16/15 11:59	1
Lithium	ND		0.0080	0.00029	mg/L		12/12/15 10:41	12/16/15 11:59	1
Molybdenum	ND		0.010	0.00023	mg/L		12/12/15 10:41	12/16/15 11:59	1
Selenium	ND		0.0050	0.00025	mg/L		12/12/15 10:41	12/16/15 11:59	1
Thallium	ND		0.0010	0.000074	mg/L		12/12/15 10:41	12/16/15 11:59	1

Lab Sample ID: MB 240-210435/1-A
Matrix: Water
Analysis Batch: 211893

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 210435

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020	0.011	mg/L		12/12/15 10:41	12/21/15 16:04	1

Lab Sample ID: LCS 240-210435/3-A
Matrix: Water
Analysis Batch: 211279

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 210435

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0945		mg/L		94	80 - 120
Arsenic	1.00	0.923		mg/L		92	80 - 120
Barium	1.00	0.929		mg/L		93	80 - 120
Beryllium	1.00	0.950		mg/L		95	80 - 120
Cadmium	1.00	0.955		mg/L		96	80 - 120
Calcium	10.0	10.2		mg/L		102	80 - 120
Chromium	1.00	0.940		mg/L		94	80 - 120
Cobalt	1.00	0.942		mg/L		94	80 - 120
Lead	1.00	0.952		mg/L		95	80 - 120
Lithium	0.100	0.0920		mg/L		92	80 - 120
Molybdenum	0.100	0.0911		mg/L		91	80 - 120
Selenium	1.00	0.934		mg/L		93	80 - 120
Thallium	0.250	0.238		mg/L		95	80 - 120

Lab Sample ID: LCS 240-210435/3-A
Matrix: Water
Analysis Batch: 211893

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 210435

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.100	0.0989		mg/L		99	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-307237/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307432 — **Prep Batch: 307237**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/10/15 10:20	12/10/15 15:19	1

Lab Sample ID: LCS 280-307237/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307432 — **Prep Batch: 307237**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.97		ug/L		99	84 - 120

Lab Sample ID: 280-77681-1 MS — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 307432 — **Prep Batch: 307237**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		5.00	4.99		ug/L		100	75 - 125

Lab Sample ID: 280-77681-1 MSD — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 307432 — **Prep Batch: 307237**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		5.00	5.02		ug/L		100	75 - 125	0	20

Method: 9040B - pH

Lab Sample ID: LCS 280-307214/27 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307214

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.070		SU		101	99 - 101

Lab Sample ID: LCS 280-308088/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 308088

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.040		SU		101	99 - 101

Lab Sample ID: 280-77681-2 DU — **Client Sample ID: MW-6EB**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 308088

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	5.68	HF	6.630	F3	SU		15	5
Temperature	21.4	HF	21.51		Degrees C		0.6	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-307791/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307791

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.266	J	3.0	0.25	mg/L			12/15/15 12:17	1
Fluoride	ND		0.50	0.060	mg/L			12/15/15 12:17	1
Sulfate	0.339	J	5.0	0.23	mg/L			12/15/15 12:17	1

Lab Sample ID: LCS 280-307791/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307791

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.15		mg/L		103	90 - 110
Sulfate	100	99.3		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-307791/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307791

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	5.15		mg/L		103	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	1	10

Lab Sample ID: MRL 280-307791/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307791

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.53	J	mg/L		101	50 - 150
Fluoride	0.200	0.186	J	mg/L		93	50 - 150
Sulfate	2.50	2.61	J	mg/L		105	50 - 150

Lab Sample ID: MB 280-308112/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 308112

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			12/17/15 14:54	1

Lab Sample ID: LCS 280-308112/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 308112

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	92.7		mg/L		93	90 - 110

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

Lab Sample ID: LCSD 280-308112/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 308112

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate			100	92.9		mg/L		93	90 - 110	0	10

Lab Sample ID: MRL 280-308112/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 308112

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			2.50	2.43	J	mg/L		97	50 - 150		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-307188/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307188

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/09/15 16:34	1

Lab Sample ID: LCS 280-307188/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307188

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			501	498		mg/L		99	86 - 110		

Lab Sample ID: 280-77681-A-5 DU — **Client Sample ID: 280-77681-A-5 DU**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 307188

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	8600	E		8570	E	mg/L				0.09	10

Lab Sample ID: MB 280-307561/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/12/15 12:31	1

Lab Sample ID: LCS 280-307561/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307561

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	494		mg/L		99	86 - 110		

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

Lab Sample ID: MB 280-307350/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307350

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/10/15 16:03	1

Lab Sample ID: LCS 280-307350/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307350

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: 280-77681-1 DU — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 307350

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	4.0		4.40		mg/L		10	10

Lab Sample ID: MB 280-307508/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307508

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/11/15 14:52	1

Lab Sample ID: LCS 280-307508/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 307508

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	90.0		mg/L		90	86 - 114

Lab Sample ID: 280-77681-4 DU — **Client Sample ID: MW-7**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 307508

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	9.2		8.80		mg/L		4	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-227452/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 230860 — **Prep Batch: 227452**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02222	U	0.110	0.110	1.00	0.204	pCi/L	12/15/15 12:45	01/06/16 07:16	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.9*		*40 - 110*	*12/15/15 12:45*	*01/06/16 07:16*	*1*

QC Sample Results

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

TestAmerica Job ID: 280-77681-1

Lab Sample ID: LCS 160-227452/2-A
Matrix: Water
Analysis Batch: 230860

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227452

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	10.64		1.14	1.00	0.178	pCi/L	95	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*

Lab Sample ID: LCSD 160-227452/3-A
Matrix: Water
Analysis Batch: 230860

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 227452

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.2	8.988		0.989	1.00	0.164	pCi/L	81	68 - 137	0.78	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*106*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-227493/1-A
Matrix: Water
Analysis Batch: 230350

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 227493

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2129	U	0.227	0.227	1.00	0.370	pCi/L	12/15/15 16:20	01/05/16 13:39	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.9*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:39*	*1*
Y Carrier	*84.9*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:39*	*1*

Lab Sample ID: LCS 160-227493/2-A
Matrix: Water
Analysis Batch: 230350

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227493

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			3.17	2.205		0.403	1.00	0.335	pCi/L	70	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*
Y Carrier	*75.5*		*40 - 110*

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

Lab Sample ID: LCSD 160-227493/3-A
Matrix: Water
Analysis Batch: 230350

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 227493

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			3.17	2.231		0.428	1.00	0.413	pCi/L	70	56 - 140	0.03	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*106*		*40 - 110*
Y Carrier	*78.5*		*40 - 110*

QC Association Summary

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

TestAmerica Job ID: 280-77681-1

Metals

Prep Batch: 210435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total Recoverable	Ground Water	3005A	
280-77681-2	MW-6EB	Total Recoverable	Water	3005A	
280-77681-3	MW6D	Total Recoverable	Water	3005A	
280-77681-4	MW-7	Total Recoverable	Ground Water	3005A	
280-77681-5	MW-8	Total Recoverable	Ground Water	3005A	
LCS 240-210435/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-210435/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 211279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total Recoverable	Ground Water	6020A	210435
280-77681-2	MW-6EB	Total Recoverable	Water	6020A	210435
280-77681-3	MW6D	Total Recoverable	Water	6020A	210435
280-77681-4	MW-7	Total Recoverable	Ground Water	6020A	210435
280-77681-5	MW-8	Total Recoverable	Ground Water	6020A	210435
LCS 240-210435/3-A	Lab Control Sample	Total Recoverable	Water	6020A	210435
MB 240-210435/1-A	Method Blank	Total Recoverable	Water	6020A	210435

Analysis Batch: 211893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total Recoverable	Ground Water	6020A	210435
280-77681-3	MW6D	Total Recoverable	Water	6020A	210435
280-77681-4	MW-7	Total Recoverable	Ground Water	6020A	210435
280-77681-5	MW-8	Total Recoverable	Ground Water	6020A	210435
LCS 240-210435/3-A	Lab Control Sample	Total Recoverable	Water	6020A	210435
MB 240-210435/1-A	Method Blank	Total Recoverable	Water	6020A	210435

Analysis Batch: 212003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-2	MW-6EB	Total Recoverable	Water	6020A	210435

Prep Batch: 307237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	7470A	
280-77681-1 MS	MW-6	Total/NA	Ground Water	7470A	
280-77681-1 MSD	MW-6	Total/NA	Ground Water	7470A	
280-77681-2	MW-6EB	Total/NA	Water	7470A	
280-77681-3	MW6D	Total/NA	Water	7470A	
280-77681-4	MW-7	Total/NA	Ground Water	7470A	
280-77681-5	MW-8	Total/NA	Ground Water	7470A	
LCS 280-307237/2-A	Lab Control Sample	Total/NA	Water	7470A	
MB 280-307237/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 307432

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	7470A	307237
280-77681-1 MS	MW-6	Total/NA	Ground Water	7470A	307237
280-77681-1 MSD	MW-6	Total/NA	Ground Water	7470A	307237
280-77681-2	MW-6EB	Total/NA	Water	7470A	307237
280-77681-3	MW6D	Total/NA	Water	7470A	307237
280-77681-4	MW-7	Total/NA	Ground Water	7470A	307237

Metals (Continued)

Analysis Batch: 307432 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-5	MW-8	Total/NA	Ground Water	7470A	307237
LCS 280-307237/2-A	Lab Control Sample	Total/NA	Water	7470A	307237
MB 280-307237/1-A	Method Blank	Total/NA	Water	7470A	307237

General Chemistry

Analysis Batch: 307188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-2	MW-6EB	Total/NA	Water	SM 2540C	
280-77681-A-5 DU	280-77681-A-5 DU	Total/NA	Ground Water	SM 2540C	
LCS 280-307188/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-307188/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 307214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	9040B	
280-77681-3	MW6D	Total/NA	Water	9040B	
280-77681-4	MW-7	Total/NA	Ground Water	9040B	
280-77681-5	MW-8	Total/NA	Ground Water	9040B	
LCS 280-307214/27	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 307350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	SM 2540D	
280-77681-1 DU	MW-6	Total/NA	Ground Water	SM 2540D	
280-77681-2	MW-6EB	Total/NA	Water	SM 2540D	
280-77681-3	MW6D	Total/NA	Water	SM 2540D	
LCS 280-307350/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-307350/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 307508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-4	MW-7	Total/NA	Ground Water	SM 2540D	
280-77681-4 DU	MW-7	Total/NA	Ground Water	SM 2540D	
280-77681-5	MW-8	Total/NA	Ground Water	SM 2540D	
LCS 280-307508/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-307508/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 307561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	SM 2540C	
280-77681-3	MW6D	Total/NA	Water	SM 2540C	
280-77681-4	MW-7	Total/NA	Ground Water	SM 2540C	
280-77681-5	MW-8	Total/NA	Ground Water	SM 2540C	
LCS 280-307561/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-307561/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 307791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	9056A	

General Chemistry (Continued)

Analysis Batch: 307791 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	9056A	
280-77681-2	MW-6EB	Total/NA	Water	9056A	
280-77681-3	MW6D	Total/NA	Water	9056A	
280-77681-3	MW6D	Total/NA	Water	9056A	
280-77681-4	MW-7	Total/NA	Ground Water	9056A	
280-77681-4	MW-7	Total/NA	Ground Water	9056A	
280-77681-5	MW-8	Total/NA	Ground Water	9056A	
LCS 280-307791/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-307791/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-307791/6	Method Blank	Total/NA	Water	9056A	
MRL 280-307791/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 308088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-2	MW-6EB	Total/NA	Water	9040B	
280-77681-2 DU	MW-6EB	Total/NA	Water	9040B	
LCS 280-308088/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 308112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-5	MW-8	Total/NA	Ground Water	9056A	
LCS 280-308112/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-308112/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-308112/6	Method Blank	Total/NA	Water	9056A	
MRL 280-308112/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 227452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	PrecSep-21	
280-77681-2	MW-6EB	Total/NA	Water	PrecSep-21	
280-77681-3	MW6D	Total/NA	Water	PrecSep-21	
280-77681-4	MW-7	Total/NA	Ground Water	PrecSep-21	
280-77681-5	MW-8	Total/NA	Ground Water	PrecSep-21	
LCS 160-227452/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-227452/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	
MB 160-227452/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 227493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77681-1	MW-6	Total/NA	Ground Water	PrecSep_0	
280-77681-2	MW-6EB	Total/NA	Water	PrecSep_0	
280-77681-3	MW6D	Total/NA	Water	PrecSep_0	
280-77681-4	MW-7	Total/NA	Ground Water	PrecSep_0	
280-77681-5	MW-8	Total/NA	Ground Water	PrecSep_0	
LCS 160-227493/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-227493/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-227493/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-77681-1

Client Sample ID: MW-6

Date Collected: 12/05/15 13:00
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-1

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	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 12:07	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	211893	12/21/15 16:12	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307237	12/10/15 10:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307432	12/10/15 15:24	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307214	12/08/15 22:16	MAS	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	307791	12/16/15 01:47	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	307791	12/16/15 02:04	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	307561	12/12/15 12:31	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307350	12/10/15 16:03	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			899.64 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	899.64 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			899.64 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	899.64 mL		230655	01/05/16 13:44	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Client Sample ID: MW-6EB

Date Collected: 12/05/15 13:00
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-2

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	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 12:11	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	212003	12/22/15 13:20	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307237	12/10/15 10:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307432	12/10/15 15:30	CDH	TAL DEN
Total/NA	Analysis	9040B		1			308088	12/16/15 21:25	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	307791	12/16/15 02:21	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	307188	12/09/15 16:34	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307350	12/10/15 16:03	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			895.33 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	895.33 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			895.33 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	895.33 mL		230655	01/05/16 13:44	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-77681-1

Client Sample ID: MW6D

Date Collected: 12/05/15 13:00
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-3
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	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 12:15	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	211893	12/21/15 16:20	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307237	12/10/15 10:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307432	12/10/15 15:37	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307214	12/08/15 22:12	MAS	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	307791	12/16/15 03:11	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	307791	12/16/15 03:28	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	307561	12/12/15 12:31	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307350	12/10/15 16:03	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			862.07 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	862.07 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			862.07 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	862.07 mL		230655	01/05/16 13:45	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Client Sample ID: MW-7

Date Collected: 12/06/15 13:30
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-4
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	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 12:19	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	211893	12/21/15 16:24	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307237	12/10/15 10:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307432	12/10/15 15:40	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307214	12/08/15 22:09	MAS	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	307791	12/16/15 03:45	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	307791	12/16/15 04:02	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	307561	12/12/15 12:31	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307508	12/11/15 14:52	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			910.45 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	910.45 mL		230860	01/06/16 07:18	MFM	TAL SL
Total/NA	Prep	PrecSep_0			910.45 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	910.45 mL		230655	01/05/16 13:46	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-77681-1

Client Sample ID: MW-8

Date Collected: 12/06/15 11:35
Date Received: 12/08/15 16:30

Lab Sample ID: 280-77681-5

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	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 12:23	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210435	12/12/15 10:41	WKD	TAL CAN
Total Recoverable	Analysis	6020A		10	50 mL	50 mL	211893	12/21/15 16:28	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307237	12/10/15 10:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307432	12/10/15 15:42	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307214	12/08/15 22:21	MAS	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	308112	12/17/15 20:22	TLP	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	307791	12/16/15 04:19	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	307561	12/12/15 12:31	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307508	12/11/15 14:52	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			926.32 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	926.32 mL		230860	01/06/16 07:19	MFM	TAL SL
Total/NA	Prep	PrecSep_0			926.32 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	926.32 mL		230655	01/05/16 13:46	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	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

Certification Summary

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

TestAmerica Job ID: 280-77681-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

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

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Ground Water	Mercury
7470A	7470A	Water	Mercury
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 certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Illinois	NELAP	5	200004	07-31-16
Kansas	NELAP	7	E-10336	01-31-16 *
Kentucky (UST)	State Program	4	58	02-26-16 *
Kentucky (WW)	State Program	4	98016	12-31-15 *
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-16
Nevada	State Program	9	OH-000482008A	07-31-16
New Jersey	NELAP	2	OH001	06-30-16
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-16 *
Pennsylvania	NELAP	3	68-00340	08-31-16
Texas	NELAP	6	T104704517-15-5	08-31-16
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-16
Washington	State Program	10	C971	01-12-16 *
West Virginia DEP	State Program	3	210	12-31-15 *
Wisconsin	State Program	5	999518190	08-31-16

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	ELAP	9	2886	03-31-16
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-77681-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10236	01-31-16 *
Kentucky (DW)	State Program	4	90125	12-31-15 *
L-A-B	DoD ELAP		L2305	04-10-16 *
Louisiana	NELAP	6	04080	06-30-16
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-16 *
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-16 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

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

Chain of Custody Record

280-77681 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information				
Client Contact: ~~Lynn~~ Anna Lundin	Sampler: Lynn Spencer	Lab PM: Kupper, Stephanie K	Carrier Tracking No(s):	COC No:
	Phone: 907-440-4224	E-Mail: stephanie.kupper@testamericainc.com		Page: Page ___ of ___
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) (c) 303-351-2139 703-786-4964	PO #: Purchase Order Requested			
Email: Lynn.Lutz@hdrinc.com Anna.Lundin@hdrinc.com	WO #:			
Project Name: ~~Valmont~~ Hayden Station	Project #: 28014230			
Site: MW-6; MW-7; MW-8	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:

Pls. check against full list of Analytes

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 (12) - 6020A, Mercury - 7470A - TA Canton	pH - 9040B, Anions - 9056A	2540D - Total Suspended Solids	Radium - 9315_Ra226, 9320_Ra228 - TA St. Louis	Metals - (Boron and Calcium) - TA Canton	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D	D		
MW-6	12/5/15	1300	G	Water			X	X	X	X	X	X	7	
~~EB-1~~, MW-6EB	12/5/15	1300	G	water			X	X	X	X	X	X	7	
~~DUP-1~~, MW6D	12/5/15	1300	G	water			X	X	X	X	X	X	7	
MW-7	12/6/15	1330	G	water			X	X	X	X	X	X	7	
MW-8	12/7/15	1135	G	water			X	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: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
L. Spencer, HDR	12/8/15; 1100	HDR	MAH Rohr	12/8/15, 1100	HDR
[illegible], HDR	12/8/15 1630		Maria Soto	12/8/15 1630	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: 822968, 822967, 822966, 822965
Cooler Temperature(s) °C and Other Remarks: 5.2, 4.2 IR 7 to 0.0 08Dec15

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)
Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North, ,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Xcel Energy CCR - Hayden Station

Sampler:
Phone:
Due Date Requested: 1/8/2016
TAT Requested (days):
PO #:
WO #:
Project #: 28014377
SSOW#:

Lab PM: Kupper, Stephanie K
E-Mail: stephanie.kupper@testamericainc.com
Carrier Tracking No(s):

COC No: 280-332933.1
Page: Page 1 of 1
Job #: 280-77681-1

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 - 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)	Ra226_Ra228	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-77681-1)	12/5/15	13:00 Mountain		Water			X	X	X	2	
MW-6EB (280-77681-2)	12/5/15	13:00 Mountain		Water			X	X	X	2	
MW6D (280-77681-3)	12/5/15	13:00 Mountain		Water			X	X	X	2	
MW-7 (280-77681-4)	12/6/15	13:30 Mountain		Water			X	X	X	2	
MW-8 (280-77681-5)	12/6/15	11:35 Mountain		Water			X	X	X	2	

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)

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	12/9/15 @1450	TAD	[signature]	12.10.15 0920	TA STL

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

2.2|C2.3

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kupper, Stephanie K	Carrier Tracking No(s):	COC No: 280-332934.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-77681-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 12/24/2015			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

S57

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) Copy Analytes	6020A/3005A (MOD) Custom Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-6 (280-77681-1)	12/5/15	13:00 Mountain		Water			X	X	1	Use Collision Cell
MW-6EB (280-77681-2)	12/5/15	13:00 Mountain		Water			X	X	1	Use Collision Cell
MW6D (280-77681-3)	12/5/15	13:00 Mountain		Water			X	X	1	Use Collision Cell
MW-7 (280-77681-4)	12/6/15	13:30 Mountain		Water			X	X	1	Use Collision Cell
MW-8 (280-77681-5)	12/6/15	11:35 Mountain		Water			X	X	1	Use Collision Cell

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)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 12/9/15 @ 1450	Company: TAD	Received by:	Date/Time: 12/10/15 1000	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:

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

Client Denver Site Name_____ Cooler unpacked by:

Cooler Received on 12.10.15 Opened on 12.10.15

FedEx: 1st Grd Exp. UPS FAS Stetson Client Drop Off TestAmerica Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

TestAmerica Cooler # _____ 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
   IR GUN# 53 (CF +0.1 °C) Observed Cooler Temp. 2.2 °C Corrected Cooler Temp. 2.3 °C
   IR GUN# 48 (CF -0.3 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C~~
   IR GUN# 8 (CF -0.5 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC559158
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. 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)

16. 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: 280-77681-1

Login Number: 77681
List Number: 1
Creator: Muniz, Ashley T

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.	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: 280-77681-1

Login Number: 77681
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 12/10/15 12:50 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	3.8
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.	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 - Hayden

TestAmerica Job ID: 280-77681-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)							
280-77681-1	MW-6	101							
280-77681-4	MW-7	101							
280-77681-5	MW-8	62.0							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)							
280-77681-2	MW-6EB	98.0							
280-77681-3	MW6D	67.2							
LCS 160-227452/2-A	Lab Control Sample	108							
LCSD 160-227452/3-A	Lab Control Sample Dup	106							
MB 160-227452/1-A	Method Blank	84.9							

Tracer/Carrier Legend

Ba = 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 (40-110)	Y (40-110)						
280-77681-1	MW-6	101	74.0						
280-77681-4	MW-7	101	86.0						
280-77681-5	MW-8	62.0	86.4						

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
280-77681-2	MW-6EB	98.0	69.9						
280-77681-3	MW6D	75.1	85.6						
LCS 160-227493/2-A	Lab Control Sample	108	75.5						
LCSD 160-227493/3-A	Lab Control Sample Dup	106	78.5						
MB 160-227493/1-A	Method Blank	84.9	84.9						

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-80615-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
4/7/2016 3:14:53 PM

Stephanie Kupper, Project Manager I
(303)736-0182
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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 - Hayden

TestAmerica Job ID: 280-80615-1

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
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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 280-80615-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-80615-1

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.

This report may include data with reporting limits (RLs) less than TestAmerica's standard reporting limit. These data and reporting limits are being used specifically to meet the needs of this project. Note that, data are not customarily reported to these levels without qualifiers, because they are inherently less reliable and potentially less defensible than the latest industry standards require.

RECEIPT

The samples were received on 3/10/2016 at 11:06 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 8.9º C and 9.9º C.

The samples arrived above the recommended 6.0C. The coolers did not have enough ice.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 03/17/2016 and analyzed on 03/26/2016, 03/28/2016 and 03/29/2016.

Barium, Beryllium and Calcium were detected in method blank MB 240-221986/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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-6 (280-80615-1)[500X], MW-7 (280-80615-2)[500X], MW-8 (280-80615-3)[20X] and MW-7D (280-80615-4)[500X] 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 MERCURY

Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 03/18/2016 and analyzed on 03/24/2016.

Mercury failed the recovery criteria low for the MS and MSD of sample 280-80610-1 in batch 280-318118. 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 DISSOLVED SOLIDS

Job ID: 280-80615-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 03/11/2016 and 03/12/2016.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/14/2016 and 03/15/2016.

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

CORROSIVITY (PH)
Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 03/25/2016 and 03/29/2016.

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

ANIONS (28 DAYS)
Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 03/21/2016 and 03/22/2016.

Samples MW-6 (280-80615-1)[5X], MW-6 (280-80615-1)[50X], MW-7 (280-80615-2)[5X], MW-7 (280-80615-2)[50X], MW-8 (280-80615-3)[5X], MW-8 (280-80615-3)[50X], MW-7D (280-80615-4)[5X] and MW-7D (280-80615-4)[50X] 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)
Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/15/2016 and analyzed on 04/06/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4), MW-6EB (280-80615-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead.

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

RADIUM-228
Samples MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/15/2016 and analyzed on 04/05/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4), MW-6EB (280-80615-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead.

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-6 (280-80615-1), MW-7 (280-80615-2), MW-8 (280-80615-3), MW-7D (280-80615-4) and MW-6EB (280-80615-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 04/06/2016.

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 - Hayden

TestAmerica Job ID: 280-80615-1

Client Sample ID: MW-6 — Lab Sample ID: 280-80615-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00025	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0019	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.010	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00048	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	440	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.00033	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.7		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lead	0.00015	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Selenium	0.016		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00010	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
Boron	43		10	5.5	mg/L	500		6020A	Total Recoverable
Lithium	0.12		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.44	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.9	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	70		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	3100		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4700		40	19	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-7 — Lab Sample ID: 280-80615-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00081	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.0059	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00016	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	420	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.000062	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.0		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0096		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Boron	47		10	5.5	mg/L	500		6020A	Total Recoverable
Lithium	0.29		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.72	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	120		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	3200		250	12	mg/L	50		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-80615-1

Client Sample ID: MW-7 (Continued) — Lab Sample ID: 280-80615-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids (TDS)	4800		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-80615-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0027	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.017	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00021	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	470	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cadmium	0.00010	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Cobalt	0.00064	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Chromium	0.0015	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0044	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lead	0.00073	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Selenium	0.040		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Boron	0.76		0.40	0.22	mg/L	20		6020A	Total Recoverable
Lithium	0.65		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.78	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.7	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	210		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	5600		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8800		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	61		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7D — Lab Sample ID: 280-80615-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00024	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.00095	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.0063	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.000097	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	430	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.000057	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.0		0.010	0.00023	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-7D (Continued) — Lab Sample ID: 280-80615-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0086		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Boron	47		10	5.5	mg/L	500		6020A	Total Recoverable
Lithium	0.29		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.71	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.8	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	120		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	3200		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4800		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-6EB — Lab Sample ID: 280-80615-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.000080	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	0.25	J B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.000021	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	0.00075	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lithium	0.00070	J	0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.51	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.4	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Sulfate	0.94	J	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-80615-1

Method	Method Description	Protocol	Laboratory
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

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 - Hayden

TestAmerica Job ID: 280-80615-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-80615-1	MW-6	Ground Water	03/08/16 15:35	03/10/16 11:06
280-80615-2	MW-7	Ground Water	03/09/16 09:10	03/10/16 11:06
280-80615-3	MW-8	Ground Water	03/09/16 10:50	03/10/16 11:06
280-80615-4	MW-7D	Water	03/09/16 09:10	03/10/16 11:06
280-80615-5	MW-6EB	Ground Water	03/08/16 16:00	03/10/16 11:06

Client Sample Results

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

TestAmerica Job ID: 280-80615-1

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

Client Sample ID: MW-6
Date Collected: 03/08/16 15:35
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00025	J	0.0020	0.00016	mg/L		03/17/16 10:39	03/26/16 03:06	1
Arsenic	0.0019	J	0.0050	0.00049	mg/L		03/17/16 10:39	03/26/16 03:06	1
Barium	0.010	B	0.0050	0.0011	mg/L		03/17/16 10:39	03/26/16 03:06	1
Beryllium	0.00048	J B	0.0010	0.000053	mg/L		03/17/16 10:39	03/26/16 03:06	1
Calcium	440	B	1.0	0.24	mg/L		03/17/16 10:39	03/26/16 03:06	1
Cadmium	ND		0.0010	0.000061	mg/L		03/17/16 10:39	03/26/16 03:06	1
Cobalt	0.00033	J	0.0010	0.000021	mg/L		03/17/16 10:39	03/26/16 03:06	1
Chromium	ND		0.0020	0.00060	mg/L		03/17/16 10:39	03/26/16 03:06	1
Molybdenum	1.7		0.010	0.00023	mg/L		03/17/16 10:39	03/26/16 03:06	1
Lead	0.00015	J	0.0010	0.00011	mg/L		03/17/16 10:39	03/26/16 03:06	1
Selenium	0.016		0.0050	0.00025	mg/L		03/17/16 10:39	03/26/16 03:06	1
Thallium	0.00010	J	0.0010	0.000074	mg/L		03/17/16 10:39	03/26/16 03:06	1
Boron	43		10	5.5	mg/L		03/17/16 10:39	03/28/16 20:57	500
Lithium	0.12		0.0080	0.00029	mg/L		03/17/16 10:39	03/26/16 03:06	1

Client Sample ID: MW-7
Date Collected: 03/09/16 09:10
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/17/16 10:39	03/26/16 03:10	1
Arsenic	0.00081	J	0.0050	0.00049	mg/L		03/17/16 10:39	03/26/16 03:10	1
Barium	0.0059	B	0.0050	0.0011	mg/L		03/17/16 10:39	03/26/16 03:10	1
Beryllium	0.00016	J B	0.0010	0.000053	mg/L		03/17/16 10:39	03/26/16 03:10	1
Calcium	420	B	1.0	0.24	mg/L		03/17/16 10:39	03/26/16 03:10	1
Cadmium	ND		0.0010	0.000061	mg/L		03/17/16 10:39	03/26/16 03:10	1
Cobalt	0.000062	J	0.0010	0.000021	mg/L		03/17/16 10:39	03/26/16 03:10	1
Chromium	ND		0.0020	0.00060	mg/L		03/17/16 10:39	03/26/16 03:10	1
Molybdenum	1.0		0.010	0.00023	mg/L		03/17/16 10:39	03/26/16 03:10	1
Lead	ND		0.0010	0.00011	mg/L		03/17/16 10:39	03/26/16 03:10	1
Selenium	0.0096		0.0050	0.00025	mg/L		03/17/16 10:39	03/26/16 03:10	1
Thallium	ND		0.0010	0.000074	mg/L		03/17/16 10:39	03/26/16 03:10	1
Boron	47		10	5.5	mg/L		03/17/16 10:39	03/28/16 21:01	500
Lithium	0.29		0.0080	0.00029	mg/L		03/17/16 10:39	03/26/16 03:10	1

Client Sample ID: MW-8
Date Collected: 03/09/16 10:50
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/17/16 10:39	03/26/16 03:15	1
Arsenic	0.0027	J	0.0050	0.00049	mg/L		03/17/16 10:39	03/26/16 03:15	1
Barium	0.017	B	0.0050	0.0011	mg/L		03/17/16 10:39	03/26/16 03:15	1
Beryllium	0.00021	J B	0.0010	0.000053	mg/L		03/17/16 10:39	03/26/16 03:15	1
Calcium	470	B	1.0	0.24	mg/L		03/17/16 10:39	03/26/16 03:15	1
Cadmium	0.00010	J	0.0010	0.000061	mg/L		03/17/16 10:39	03/26/16 03:15	1
Cobalt	0.00064	J	0.0010	0.000021	mg/L		03/17/16 10:39	03/26/16 03:15	1
Chromium	0.0015	J	0.0020	0.00060	mg/L		03/17/16 10:39	03/26/16 03:15	1
Molybdenum	0.0044	J	0.010	0.00023	mg/L		03/17/16 10:39	03/26/16 03:15	1
Lead	0.00073	J	0.0010	0.00011	mg/L		03/17/16 10:39	03/26/16 03:15	1
Selenium	0.040		0.0050	0.00025	mg/L		03/17/16 10:39	03/26/16 03:15	1
Thallium	ND		0.0010	0.000074	mg/L		03/17/16 10:39	03/26/16 03:15	1

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

Client Sample ID: MW-8 — **Lab Sample ID: 280-80615-3**
Date Collected: 03/09/16 10:50 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.76**		0.40	0.22	mg/L		03/17/16 10:39	03/28/16 21:05	20
Lithium	**0.65**		0.0080	0.00029	mg/L		03/17/16 10:39	03/26/16 03:15	1

Client Sample ID: MW-7D — **Lab Sample ID: 280-80615-4**
Date Collected: 03/09/16 09:10 — **Matrix: Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00024**	**J**	0.0020	0.00016	mg/L		03/17/16 10:39	03/26/16 03:19	1
Arsenic	**0.00095**	**J**	0.0050	0.00049	mg/L		03/17/16 10:39	03/26/16 03:19	1
Barium	**0.0063**	**B**	0.0050	0.0011	mg/L		03/17/16 10:39	03/26/16 03:19	1
Beryllium	**0.000097**	**J B**	0.0010	0.000053	mg/L		03/17/16 10:39	03/26/16 03:19	1
Calcium	**430**	**B**	1.0	0.24	mg/L		03/17/16 10:39	03/26/16 03:19	1
Cadmium	ND		0.0010	0.000061	mg/L		03/17/16 10:39	03/26/16 03:19	1
Cobalt	**0.000057**	**J**	0.0010	0.000021	mg/L		03/17/16 10:39	03/26/16 03:19	1
Chromium	ND		0.0020	0.00060	mg/L		03/17/16 10:39	03/26/16 03:19	1
Molybdenum	**1.0**		0.010	0.00023	mg/L		03/17/16 10:39	03/26/16 03:19	1
Lead	ND		0.0010	0.00011	mg/L		03/17/16 10:39	03/26/16 03:19	1
Selenium	**0.0086**		0.0050	0.00025	mg/L		03/17/16 10:39	03/26/16 03:19	1
Thallium	ND		0.0010	0.000074	mg/L		03/17/16 10:39	03/26/16 03:19	1
Boron	**47**		10	5.5	mg/L		03/17/16 10:39	03/28/16 21:10	500
Lithium	**0.29**		0.0080	0.00029	mg/L		03/17/16 10:39	03/26/16 03:19	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-80615-5**
Date Collected: 03/08/16 16:00 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/17/16 10:39	03/26/16 03:24	1
Arsenic	ND		0.0050	0.00049	mg/L		03/17/16 10:39	03/26/16 03:24	1
Barium	ND		0.0050	0.0011	mg/L		03/17/16 10:39	03/26/16 03:24	1
Beryllium	**0.000080**	**J B**	0.0010	0.000053	mg/L		03/17/16 10:39	03/26/16 03:24	1
Calcium	**0.25**	**J B**	1.0	0.24	mg/L		03/17/16 10:39	03/26/16 03:24	1
Cadmium	ND		0.0010	0.000061	mg/L		03/17/16 10:39	03/26/16 03:24	1
Cobalt	**0.000021**	**J**	0.0010	0.000021	mg/L		03/17/16 10:39	03/26/16 03:24	1
Chromium	ND		0.0020	0.00060	mg/L		03/17/16 10:39	03/26/16 03:24	1
Molybdenum	**0.00075**	**J**	0.010	0.00023	mg/L		03/17/16 10:39	03/26/16 03:24	1
Lead	ND		0.0010	0.00011	mg/L		03/17/16 10:39	03/26/16 03:24	1
Selenium	ND		0.0050	0.00025	mg/L		03/17/16 10:39	03/26/16 03:24	1
Thallium	ND		0.0010	0.000074	mg/L		03/17/16 10:39	03/26/16 03:24	1
Boron	ND		0.020	0.011	mg/L		03/17/16 10:39	03/29/16 22:46	1
Lithium	**0.00070**	**J**	0.0080	0.00029	mg/L		03/17/16 10:39	03/26/16 03:24	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-80615-1**
Date Collected: 03/08/16 15:35 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/18/16 08:31	03/24/16 16:59	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7 — **Lab Sample ID: 280-80615-2**
Date Collected: 03/09/16 09:10 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/18/16 08:31	03/24/16 17:01	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-80615-3**
Date Collected: 03/09/16 10:50 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/18/16 08:31	03/24/16 17:04	1

Client Sample ID: MW-7D — **Lab Sample ID: 280-80615-4**
Date Collected: 03/09/16 09:10 — **Matrix: Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/18/16 08:31	03/24/16 17:06	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-80615-5**
Date Collected: 03/08/16 16:00 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/18/16 08:31	03/24/16 17:08	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-80615-1**
Date Collected: 03/08/16 15:35 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.44	HF	0.100	0.100	SU			03/25/16 20:55	1
Temperature	21.9	HF	1.00	1.00	Degrees C			03/25/16 20:55	1
Chloride	70		15	1.3	mg/L			03/21/16 15:03	5
Fluoride	ND		2.5	0.30	mg/L			03/21/16 15:03	5
Sulfate	3100		250	12	mg/L			03/22/16 00:36	50
Total Dissolved Solids (TDS)	4700		40	19	mg/L			03/12/16 14:49	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			03/14/16 16:20	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-80615-2**
Date Collected: 03/09/16 09:10 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.72	HF	0.100	0.100	SU			03/25/16 20:58	1
Temperature	21.5	HF	1.00	1.00	Degrees C			03/25/16 20:58	1
Chloride	120		15	1.3	mg/L			03/21/16 14:45	5
Fluoride	ND		2.5	0.30	mg/L			03/21/16 14:45	5
Sulfate	3200		250	12	mg/L			03/22/16 00:18	50
Total Dissolved Solids (TDS)	4800		40	19	mg/L			03/12/16 14:49	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			03/15/16 17:39	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-80615-3**
Date Collected: 03/09/16 10:50 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.78	HF	0.100	0.100	SU			03/25/16 21:03	1

General Chemistry (Continued)

Client Sample ID: MW-8 — **Lab Sample ID: 280-80615-3**
Date Collected: 03/09/16 10:50 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.7	HF	1.00	1.00	Degrees C			03/25/16 21:03	1
Chloride	210		15	1.3	mg/L			03/21/16 14:27	5
Fluoride	ND		2.5	0.30	mg/L			03/21/16 14:27	5
Sulfate	5600		250	12	mg/L			03/22/16 00:01	50
Total Dissolved Solids (TDS)	8800		100	47	mg/L			03/12/16 14:49	1
Total Suspended Solids	61		4.0	1.1	mg/L			03/15/16 17:39	1

Client Sample ID: MW-7D — **Lab Sample ID: 280-80615-4**
Date Collected: 03/09/16 09:10 — **Matrix: Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.71	HF	0.100	0.100	SU			03/25/16 21:07	1
Temperature	21.8	HF	1.00	1.00	Degrees C			03/25/16 21:07	1
Chloride	120		15	1.3	mg/L			03/21/16 14:09	5
Fluoride	ND		2.5	0.30	mg/L			03/21/16 14:09	5
Sulfate	3200		250	12	mg/L			03/21/16 23:08	50
Total Dissolved Solids (TDS)	4800		40	19	mg/L			03/12/16 14:49	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			03/15/16 17:39	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-80615-5**
Date Collected: 03/08/16 16:00 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.51	HF	0.100	0.100	SU			03/29/16 20:33	1
Temperature	21.4	HF	1.00	1.00	Degrees C			03/29/16 20:33	1
Chloride	ND		3.0	0.25	mg/L			03/21/16 22:50	1
Fluoride	ND		0.50	0.060	mg/L			03/21/16 22:50	1
Sulfate	0.94	J	5.0	0.23	mg/L			03/21/16 22:50	1
Total Dissolved Solids (TDS)	ND		40	19	mg/L			03/11/16 15:24	1
Total Suspended Solids	ND		4.0	1.1	mg/L			03/14/16 16:20	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-80615-1**
Date Collected: 03/08/16 15:35 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.270		0.138	0.140	1.00	0.184	pCi/L	03/15/16 17:25	04/06/16 06:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*03/15/16 17:25*	*04/06/16 06:56*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-80615-2**
Date Collected: 03/09/16 09:10 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0614	U	0.0898	0.0900	1.00	0.153	pCi/L	03/15/16 17:25	04/06/16 06:57	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	03/15/16 17:25	04/06/16 06:57	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-80615-3**
Date Collected: 03/09/16 10:50 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.299		0.145	0.147	1.00	0.190	pCi/L	03/15/16 17:25	04/06/16 06:57	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	03/15/16 17:25	04/06/16 06:57	1

Client Sample ID: MW-7D — **Lab Sample ID: 280-80615-4**
Date Collected: 03/09/16 09:10 — **Matrix: Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0658	U	0.0891	0.0893	1.00	0.150	pCi/L	03/15/16 17:25	04/06/16 06:57	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110	03/15/16 17:25	04/06/16 06:57	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-80615-5**
Date Collected: 03/08/16 16:00 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0375	U	0.0819	0.0820	1.00	0.149	pCi/L	03/15/16 17:25	04/06/16 06:57	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.9		40 - 110	03/15/16 17:25	04/06/16 06:57	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-80615-1**
Date Collected: 03/08/16 15:35 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0833	U	0.197	0.198	1.00	0.341	pCi/L	03/15/16 17:52	04/05/16 10:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110	03/15/16 17:52	04/05/16 10:58	1
Y Carrier	78.5		40 - 110	03/15/16 17:52	04/05/16 10:58	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-80615-2**
Date Collected: 03/09/16 09:10 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0450	U	0.191	0.191	1.00	0.335	pCi/L	03/15/16 17:52	04/05/16 10:58	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	03/15/16 17:52	04/05/16 10:58	1
Y Carrier	79.3		40 - 110	03/15/16 17:52	04/05/16 10:58	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-80615-3**
Date Collected: 03/09/16 10:50 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.131	U	0.210	0.211	1.00	0.355	pCi/L	03/15/16 17:52	04/05/16 10:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	03/15/16 17:52	04/05/16 10:58	1
Y Carrier	80.0		40 - 110	03/15/16 17:52	04/05/16 10:58	1

Client Sample ID: MW-7D — **Lab Sample ID: 280-80615-4**
Date Collected: 03/09/16 09:10 — **Matrix: Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.122	U	0.219	0.219	1.00	0.371	pCi/L	03/15/16 17:52	04/05/16 10:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110	03/15/16 17:52	04/05/16 10:58	1
Y Carrier	80.4		40 - 110	03/15/16 17:52	04/05/16 10:58	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-80615-5**
Date Collected: 03/08/16 16:00 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.190	U	0.236	0.236	1.00	0.390	pCi/L	03/15/16 17:52	04/05/16 10:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.9		40 - 110	03/15/16 17:52	04/05/16 10:58	1
Y Carrier	80.0		40 - 110	03/15/16 17:52	04/05/16 10:58	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-80615-1**
Date Collected: 03/08/16 15:35 — **Matrix: Ground Water**
Date Received: 03/10/16 11:06

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.353**		0.241	0.242	5.00	0.341	pCi/L		04/06/16 22:15	1

Client Sample Results

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

TestAmerica Job ID: 280-80615-1

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

Client Sample ID: MW-7
Date Collected: 03/09/16 09:10
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.106	U	0.211	0.211	5.00	0.335	pCi/L		04/06/16 22:15	1

Client Sample ID: MW-8
Date Collected: 03/09/16 10:50
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.429**		0.255	0.257	5.00	0.355	pCi/L		04/06/16 22:15	1

Client Sample ID: MW-7D
Date Collected: 03/09/16 09:10
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.188	U	0.236	0.237	5.00	0.371	pCi/L		04/06/16 22:15	1

Client Sample ID: MW-6EB
Date Collected: 03/08/16 16:00
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-5
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.227	U	0.249	0.250	5.00	0.390	pCi/L		04/06/16 22:15	1

QC Sample Results

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

TestAmerica Job ID: 280-80615-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-221986/1-A
Matrix: Water
Analysis Batch: 223425

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 221986

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/17/16 10:39	03/26/16 01:50	1
Arsenic	ND		0.0050	0.00049	mg/L		03/17/16 10:39	03/26/16 01:50	1
Barium	0.00143	J	0.0050	0.0011	mg/L		03/17/16 10:39	03/26/16 01:50	1
Beryllium	0.0000580	J	0.0010	0.000053	mg/L		03/17/16 10:39	03/26/16 01:50	1
Calcium	0.381	J	1.0	0.24	mg/L		03/17/16 10:39	03/26/16 01:50	1
Cadmium	ND		0.0010	0.000061	mg/L		03/17/16 10:39	03/26/16 01:50	1
Cobalt	ND		0.0010	0.000021	mg/L		03/17/16 10:39	03/26/16 01:50	1
Chromium	ND		0.0020	0.00060	mg/L		03/17/16 10:39	03/26/16 01:50	1
Molybdenum	ND		0.010	0.00023	mg/L		03/17/16 10:39	03/26/16 01:50	1
Lead	ND		0.0010	0.00011	mg/L		03/17/16 10:39	03/26/16 01:50	1
Selenium	ND		0.0050	0.00025	mg/L		03/17/16 10:39	03/26/16 01:50	1
Thallium	ND		0.0010	0.000074	mg/L		03/17/16 10:39	03/26/16 01:50	1
Lithium	ND		0.0080	0.00029	mg/L		03/17/16 10:39	03/26/16 01:50	1

Lab Sample ID: MB 240-221986/1-A
Matrix: Water
Analysis Batch: 223620

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 221986

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020	0.011	mg/L		03/17/16 10:39	03/28/16 20:40	1

Lab Sample ID: LCS 240-221986/2-A
Matrix: Water
Analysis Batch: 223425

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 221986

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0954		mg/L		95	80 - 120
Arsenic	1.00	0.976		mg/L		98	80 - 120
Barium	1.00	0.934		mg/L		93	80 - 120
Beryllium	1.00	1.04		mg/L		104	80 - 120
Calcium	10.0	9.97		mg/L		100	80 - 120
Cadmium	1.00	0.970		mg/L		97	80 - 120
Cobalt	1.00	0.939		mg/L		94	80 - 120
Chromium	1.00	0.927		mg/L		93	80 - 120
Molybdenum	0.100	0.0954		mg/L		95	80 - 120
Lead	1.00	0.922		mg/L		92	80 - 120
Selenium	1.00	0.938		mg/L		94	80 - 120
Thallium	0.250	0.232		mg/L		93	80 - 120
Lithium	0.100	0.104		mg/L		104	80 - 120

Lab Sample ID: LCS 240-221986/2-A
Matrix: Water
Analysis Batch: 223620

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 221986

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.100	0.0979		mg/L		98	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-317361/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 318118 — **Prep Batch: 317361**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/18/16 08:31	03/24/16 16:29	1

Lab Sample ID: LCS 280-317361/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 318118 — **Prep Batch: 317361**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.98		ug/L		100	84 - 120

Lab Sample ID: LCSD 280-317361/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 318118 — **Prep Batch: 317361**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	5.00	5.05		ug/L		101	84 - 120	1	15

Method: 9040B - pH

Lab Sample ID: LCS 280-318286/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 318286

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.030		SU		100	99 - 101

Lab Sample ID: LCS 280-318764/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 318764

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.030		SU		100	99 - 101

Lab Sample ID: 280-80615-5 DU — **Client Sample ID: MW-6EB**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 318764

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	6.51	HF	6.850		SU		5	5
Temperature	21.4	HF	21.24		Degrees C		0.8	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-317617/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 317617

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			03/21/16 11:39	1
Fluoride	ND		0.50	0.060	mg/L			03/21/16 11:39	1

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

Lab Sample ID: MB 280-317617/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 317617

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			03/21/16 11:39	1

Lab Sample ID: LCS 280-317617/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 317617

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.9		mg/L		99	90 - 110
Fluoride	5.00	5.09		mg/L		102	90 - 110
Sulfate	100	98.8		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-317617/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 317617

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.9		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.11		mg/L		102	90 - 110	0	10
Sulfate	100	98.9		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-317617/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 317617

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.52	J	mg/L		101	50 - 150
Fluoride	0.200	0.161	J	mg/L		81	50 - 150
Sulfate	2.50	2.50	J	mg/L		100	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-316637/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316637

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/11/16 15:24	1

Lab Sample ID: LCS 280-316637/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316637

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	490		mg/L		98	86 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: MB 280-316686/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/12/16 14:49	1

Lab Sample ID: LCS 280-316686/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	495		mg/L		99	86 - 110

Lab Sample ID: LCSD 280-316686/3 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316686

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	492		mg/L		98	86 - 110	1	20

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

Lab Sample ID: MB 280-316832/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316832

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			03/14/16 16:20	1

Lab Sample ID: LCS 280-316832/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316832

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	89.6		mg/L		90	86 - 114

Lab Sample ID: LCSD 280-316832/2 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316832

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	93.6		mg/L		94	86 - 114	4	20

Lab Sample ID: MB 280-316970/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316970

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			03/15/16 17:39	1

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

Lab Sample ID: LCS 280-316970/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316970

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	95.6		mg/L		96	86 - 114

Lab Sample ID: 280-80615-4 DU — **Client Sample ID: MW-7D**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 316970

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	2.0	J	2.00	J	mg/L		0	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-240658/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244606 — **Prep Batch: 240658**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1092	U	0.105	0.105	1.00	0.164	pCi/L	03/15/16 17:25	04/06/16 06:51	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*03/15/16 17:25*	*04/06/16 06:51*	*1*

Lab Sample ID: LCS 160-240658/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244606 — **Prep Batch: 240658**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.2	15.13		1.55	1.00	0.173	pCi/L	136	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*

Lab Sample ID: LCSD 160-240658/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244606 — **Prep Batch: 240658**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.2	13.62		1.41	1.00	0.156	pCi/L	122	68 - 137	0.51	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*109*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-240659/1-A
Matrix: Water
Analysis Batch: 244145

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240659

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09936	U	0.224	0.224	1.00	0.384	pCi/L	03/15/16 17:52	04/05/16 10:49	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*03/15/16 17:52*	*04/05/16 10:49*	*1*
Y Carrier	*85.2*		*40 - 110*	*03/15/16 17:52*	*04/05/16 10:49*	*1*

Lab Sample ID: LCS 160-240659/2-A
Matrix: Water
Analysis Batch: 244145

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240659

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			15.4	17.43		1.82	1.00	0.405	pCi/L	113	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*
Y Carrier	*84.1*		*40 - 110*

Lab Sample ID: LCSD 160-240659/3-A
Matrix: Water
Analysis Batch: 244145

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 240659

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			15.4	18.66		1.92	1.00	0.362	pCi/L	121	56 - 140	0.33	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*109*		*40 - 110*
Y Carrier	*84.5*		*40 - 110*

QC Association Summary

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

TestAmerica Job ID: 280-80615-1

Metals

Prep Batch: 221986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total Recoverable	Ground Water	3005A	
280-80615-2	MW-7	Total Recoverable	Ground Water	3005A	
280-80615-3	MW-8	Total Recoverable	Ground Water	3005A	
280-80615-4	MW-7D	Total Recoverable	Water	3005A	
280-80615-5	MW-6EB	Total Recoverable	Ground Water	3005A	
LCS 240-221986/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-221986/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 223425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total Recoverable	Ground Water	6020A	221986
280-80615-2	MW-7	Total Recoverable	Ground Water	6020A	221986
280-80615-3	MW-8	Total Recoverable	Ground Water	6020A	221986
280-80615-4	MW-7D	Total Recoverable	Water	6020A	221986
280-80615-5	MW-6EB	Total Recoverable	Ground Water	6020A	221986
LCS 240-221986/2-A	Lab Control Sample	Total Recoverable	Water	6020A	221986
MB 240-221986/1-A	Method Blank	Total Recoverable	Water	6020A	221986

Analysis Batch: 223620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total Recoverable	Ground Water	6020A	221986
280-80615-2	MW-7	Total Recoverable	Ground Water	6020A	221986
280-80615-3	MW-8	Total Recoverable	Ground Water	6020A	221986
280-80615-4	MW-7D	Total Recoverable	Water	6020A	221986
LCS 240-221986/2-A	Lab Control Sample	Total Recoverable	Water	6020A	221986
MB 240-221986/1-A	Method Blank	Total Recoverable	Water	6020A	221986

Analysis Batch: 223799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-5	MW-6EB	Total Recoverable	Ground Water	6020A	221986

Prep Batch: 317361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	7470A	
280-80615-2	MW-7	Total/NA	Ground Water	7470A	
280-80615-3	MW-8	Total/NA	Ground Water	7470A	
280-80615-4	MW-7D	Total/NA	Water	7470A	
280-80615-5	MW-6EB	Total/NA	Ground Water	7470A	
LCS 280-317361/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-317361/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	
MB 280-317361/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 318118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	7470A	317361
280-80615-2	MW-7	Total/NA	Ground Water	7470A	317361
280-80615-3	MW-8	Total/NA	Ground Water	7470A	317361
280-80615-4	MW-7D	Total/NA	Water	7470A	317361
280-80615-5	MW-6EB	Total/NA	Ground Water	7470A	317361
LCS 280-317361/2-A	Lab Control Sample	Total/NA	Water	7470A	317361
LCSD 280-317361/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	317361

Metals (Continued)

Analysis Batch: 318118 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-317361/1-A	Method Blank	Total/NA	Water	7470A	317361

General Chemistry

Analysis Batch: 316637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-5	MW-6EB	Total/NA	Ground Water	SM 2540C	
LCS 280-316637/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-316637/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 316686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	SM 2540C	
280-80615-2	MW-7	Total/NA	Ground Water	SM 2540C	
280-80615-3	MW-8	Total/NA	Ground Water	SM 2540C	
280-80615-4	MW-7D	Total/NA	Water	SM 2540C	
LCS 280-316686/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-316686/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
MB 280-316686/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 316832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	SM 2540D	
280-80615-5	MW-6EB	Total/NA	Ground Water	SM 2540D	
LCS 280-316832/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-316832/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
MB 280-316832/3	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 316970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-2	MW-7	Total/NA	Ground Water	SM 2540D	
280-80615-3	MW-8	Total/NA	Ground Water	SM 2540D	
280-80615-4	MW-7D	Total/NA	Water	SM 2540D	
280-80615-4 DU	MW-7D	Total/NA	Water	SM 2540D	
LCS 280-316970/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-316970/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 317617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	9056A	
280-80615-1	MW-6	Total/NA	Ground Water	9056A	
280-80615-2	MW-7	Total/NA	Ground Water	9056A	
280-80615-2	MW-7	Total/NA	Ground Water	9056A	
280-80615-3	MW-8	Total/NA	Ground Water	9056A	
280-80615-3	MW-8	Total/NA	Ground Water	9056A	
280-80615-4	MW-7D	Total/NA	Water	9056A	
280-80615-4	MW-7D	Total/NA	Water	9056A	
280-80615-5	MW-6EB	Total/NA	Ground Water	9056A	
LCS 280-317617/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-317617/5	Lab Control Sample Dup	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 317617 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-317617/6	Method Blank	Total/NA	Water	9056A	
MRL 280-317617/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 318286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	9040B	
280-80615-2	MW-7	Total/NA	Ground Water	9040B	
280-80615-3	MW-8	Total/NA	Ground Water	9040B	
280-80615-4	MW-7D	Total/NA	Water	9040B	
LCS 280-318286/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 318764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-5	MW-6EB	Total/NA	Ground Water	9040B	
280-80615-5 DU	MW-6EB	Total/NA	Ground Water	9040B	
LCS 280-318764/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 240658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	PrecSep-21	
280-80615-2	MW-7	Total/NA	Ground Water	PrecSep-21	
280-80615-3	MW-8	Total/NA	Ground Water	PrecSep-21	
280-80615-4	MW-7D	Total/NA	Water	PrecSep-21	
280-80615-5	MW-6EB	Total/NA	Ground Water	PrecSep-21	
LCS 160-240658/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-240658/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	
MB 160-240658/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 240659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80615-1	MW-6	Total/NA	Ground Water	PrecSep_0	
280-80615-2	MW-7	Total/NA	Ground Water	PrecSep_0	
280-80615-3	MW-8	Total/NA	Ground Water	PrecSep_0	
280-80615-4	MW-7D	Total/NA	Water	PrecSep_0	
280-80615-5	MW-6EB	Total/NA	Ground Water	PrecSep_0	
LCS 160-240659/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-240659/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-240659/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-80615-1

Client Sample ID: MW-6

Date Collected: 03/08/16 15:35
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-1

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	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223425	03/26/16 03:06	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	223620	03/28/16 20:57	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	317361	03/18/16 08:31	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	318118	03/24/16 16:59	CDH	TAL DEN
Total/NA	Analysis	9040B		1			318286	03/25/16 20:55	MAS	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	317617	03/21/16 15:03	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	317617	03/22/16 00:36	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	316686	03/12/16 14:49	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	316832	03/14/16 16:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.09 mL	1.0 g	240658	03/15/16 17:25	CMC	TAL SL
Total/NA	Analysis	9315		1	999.09 mL		244606	04/06/16 06:56	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.09 mL	1.0 g	240659	03/15/16 17:52	CMC	TAL SL
Total/NA	Analysis	9320		1	999.09 mL		244235	04/05/16 10:58	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			244673	04/06/16 22:15	RTM	TAL SL

Client Sample ID: MW-7

Date Collected: 03/09/16 09:10
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-2

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	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223425	03/26/16 03:10	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	223620	03/28/16 21:01	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	317361	03/18/16 08:31	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	318118	03/24/16 17:01	CDH	TAL DEN
Total/NA	Analysis	9040B		1			318286	03/25/16 20:58	MAS	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	317617	03/21/16 14:45	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	317617	03/22/16 00:18	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	316686	03/12/16 14:49	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	316970	03/15/16 17:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.37 mL	1.0 g	240658	03/15/16 17:25	CMC	TAL SL
Total/NA	Analysis	9315		1	1000.37 mL		244606	04/06/16 06:57	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.37 mL	1.0 g	240659	03/15/16 17:52	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.37 mL		244235	04/05/16 10:58	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			244673	04/06/16 22:15	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-80615-1

Client Sample ID: MW-8

Date Collected: 03/09/16 10:50
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-3
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	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223425	03/26/16 03:15	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	223620	03/28/16 21:05	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	317361	03/18/16 08:31	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	318118	03/24/16 17:04	CDH	TAL DEN
Total/NA	Analysis	9040B		1			318286	03/25/16 21:03	MAS	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	317617	03/21/16 14:27	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	317617	03/22/16 00:01	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	316686	03/12/16 14:49	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	316970	03/15/16 17:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.94 mL	1.0 g	240658	03/15/16 17:25	CMC	TAL SL
Total/NA	Analysis	9315		1	999.94 mL		244606	04/06/16 06:57	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.94 mL	1.0 g	240659	03/15/16 17:52	CMC	TAL SL
Total/NA	Analysis	9320		1	999.94 mL		244235	04/05/16 10:58	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			244673	04/06/16 22:15	RTM	TAL SL

Client Sample ID: MW-7D

Date Collected: 03/09/16 09:10
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-4
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	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223425	03/26/16 03:19	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	223620	03/28/16 21:10	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	317361	03/18/16 08:31	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	318118	03/24/16 17:06	CDH	TAL DEN
Total/NA	Analysis	9040B		1			318286	03/25/16 21:07	MAS	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	317617	03/21/16 14:09	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	317617	03/21/16 23:08	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	316686	03/12/16 14:49	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	316970	03/15/16 17:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.11 mL	1.0 g	240658	03/15/16 17:25	CMC	TAL SL
Total/NA	Analysis	9315		1	999.11 mL		244606	04/06/16 06:57	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.11 mL	1.0 g	240659	03/15/16 17:52	CMC	TAL SL
Total/NA	Analysis	9320		1	999.11 mL		244235	04/05/16 10:58	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			244673	04/06/16 22:15	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-80615-1

Client Sample ID: MW-6EB

Date Collected: 03/08/16 16:00
Date Received: 03/10/16 11:06

Lab Sample ID: 280-80615-5

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	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223425	03/26/16 03:24	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	221986	03/17/16 10:39	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223799	03/29/16 22:46	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	317361	03/18/16 08:31	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	318118	03/24/16 17:08	CDH	TAL DEN
Total/NA	Analysis	9040B		1			318764	03/29/16 20:33	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	317617	03/21/16 22:50	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	316637	03/11/16 15:24	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	316832	03/14/16 16:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.77 mL	1.0 g	240658	03/15/16 17:25	CMC	TAL SL
Total/NA	Analysis	9315		1	1000.77 mL		244606	04/06/16 06:57	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.77 mL	1.0 g	240659	03/15/16 17:52	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.77 mL		244235	04/05/16 10:58	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			244673	04/06/16 22:15	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

Certification Summary

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

TestAmerica Job ID: 280-80615-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

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

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Ground Water	Mercury
7470A	7470A	Water	Mercury
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 certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-16 *
Illinois	NELAP	5	200004	07-31-16 *
Kansas	NELAP	7	E-10336	01-31-16 *
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-16
Nevada	State Program	9	OH-000482008A	07-31-16 *
New Jersey	NELAP	2	OH001	06-30-16 *
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-16
Texas	NELAP	6	T104704517-15-5	08-31-16
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-16
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16
Wisconsin	State Program	5	999518190	08-31-16

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16

* Certification renewal pending - certification considered valid.

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-16 *
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

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

Chain of Custody Record

280-80615 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Justin Bills	Lab PM: Kupper, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: 518-331-7027	E-Mail: stephanie.kupper@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 - Hayden	Project #: 28014377			
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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~ JB 3/10/16				~~Water~~		~~N~~							
MW-6	3/8/16	1535	G	Water	N	N	1	2	1	1	2	7	
MW-7	3/9/16	0910	G	Water	N	N	1	2	1	1	2	7	
MW-8	3/9/16	1050	G	Water	N	N	1	2	1	1	2	7	
~~Field Duplicate~~ JB 3/10/16 MW-7D	3/9/16	0910	G	Water	N	N	1	2	1	1	2	7	
~~Equipment Blank~~ JB 3/10/16 MW-6EB	3/8/16	1600	G	Water	N	N	1	2	1	1	2	7	

3/10/16

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
Justin Bills	3/10/16 1106		Mayra Soto	3/10/16 1106	

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: Transfer by MS 10.1, 9.1 IRT -0.2

4/7/2016

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)
Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North, ,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Xcel Energy CCR - Hayden Station

Sampler:
Phone:
Due Date Requested: 4/5/2016
TAT Requested (days):
PO #:
WO #:
Project #: 28014377
SSOW#:

Lab PM: Kupper, Stephanie K
E-Mail: stephanie.kupper@testamericainc.com
Carrier Tracking No(s):
COC No: 280-342634.1
Page: Page 1 of 1
Job #: 280-80615-1

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 - 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 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-6 (280-80615-1)	3/8/16	15:35 Mountain		Water			X	X	2	
MW-7 (280-80615-2)	3/9/16	09:10 Mountain		Water			X	X	2	
MW-8 (280-80615-3)	3/9/16	10:50 Mountain		Water			X	X	2	
MW-7D (280-80615-4)	3/9/16	09:10 Mountain		Water			X	X	2	
MW-6EB (280-80615-5)	3/8/16	16:00 Mountain		Water			X	X	2	

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)

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	3/11/16 1615	TA	[signature]	3.14.16 0930	TASR
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:

2.0/C 1.5

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: Kupper, Stephanie K	Carrier Tracking No(s):	COC No: 280-342633.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-80615-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/1/2016			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

549

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 12 Total Metals (w/collision cell) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-6 (280-80615-1)	3/8/16	15:35 Mountain		Water			X	1	Use Collision Cell
MW-7 (280-80615-2)	3/9/16	09:10 Mountain		Water			X	1	Use Collision Cell
MW-8 (280-80615-3)	3/9/16	10:50 Mountain		Water			X	1	Use Collision Cell
MW-7D (280-80615-4)	3/9/16	09:10 Mountain		Water			X	1	Use Collision Cell
MW-6EB (280-80615-5)	3/8/16	16:00 Mountain		Water			X	1	Use Collision Cell

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)

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	MS 3/15 3/14/16 1515		[signature]	3-16-16 940	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:

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

Client Denver Site Name_____ Cooler unpacked by:

Cooler Received on 3-16-16 Opened on 3-16-16

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

TestAmerica Cooler # _____ 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# 48 (CF -1.9 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN# 36 (CF -1.5 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN# I8 (CF -0.5 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.5 °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC559158**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? 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

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):_____.

Ref: SOP NC-SC-0005, Sample Receiving
L:\QAQC\QA Department\QA TARDIS\Document Control\Work Instructions\WI-NC-099X-011816 Cooler Receipt Form.doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-80615-1

Login Number: 80615
List Number: 1
Creator: Soto, Mayra A

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").	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: 280-80615-1

Login Number: 80615
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 03/14/16 11:24 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	4.9, 5.2
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?	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 - Hayden

TestAmerica Job ID: 280-80615-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)							
280-80615-1	MW-6	107							
280-80615-2	MW-7	109							
280-80615-3	MW-8	101							
280-80615-5	MW-6EB	94.9							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)							
280-80615-4	MW-7D	107							
LCS 160-240658/2-A	Lab Control Sample	104							
LCSD 160-240658/3-A	Lab Control Sample Dup	109							
MB 160-240658/1-A	Method Blank	92.9							

Tracer/Carrier Legend

Ba = 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 (40-110)	Y (40-110)						
280-80615-1	MW-6	107	78.5						
280-80615-2	MW-7	109	79.3						
280-80615-3	MW-8	101	80.0						
280-80615-5	MW-6EB	94.9	80.0						

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
280-80615-4	MW-7D	107	80.4						
LCS 160-240659/2-A	Lab Control Sample	104	84.1						
LCSD 160-240659/3-A	Lab Control Sample Dup	109	84.5						
MB 160-240659/1-A	Method Blank	92.9	85.2						

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-83006-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
6/9/2016 10:16:34 AM

Stephanie Kupper, Project Manager I
(303)736-0182
stephanie.kupper@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 - Hayden

TestAmerica Job ID: 280-83006-1

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.
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.
*	LCS or LCSD 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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 280-83006-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-83006-1

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 5/11/2016 at 7:49 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6º C and 1.2º C.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/16/2016 and analyzed on 05/30/2016, 05/31/2016 and 06/01/2016.

Calcium, Molybdenum and Boron failed the recovery criteria high for the MS of sample MW-6 (280-83006-1) in batch 240-232649. Boron failed the recovery criteria low for the MSD of sample MW-6 (280-83006-1) in batch 240-232649. 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-6 (280-83006-1)[500X], MW-7 (280-83006-2)[500X], MW-8 (280-83006-3)[20X] and MW-8D (280-83006-4)[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.

TOTAL MERCURY
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 05/20/2016.

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

TOTAL DISSOLVED SOLIDS
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 05/12/2016 and 05/13/2016.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 05/11/2016.

Job ID: 280-83006-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

CORROSIVITY (PH)
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 05/11/2016 and 05/12/2016.

pH adj. to 25 deg C exceeded the RPD limit for the duplicate of sample 280-82948-3. It is suspected that the probe did not have enough time to stabilize while taking the measurements.

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

ANIONS (28 DAYS)
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 05/27/2016, 05/28/2016 and 05/31/2016.

Samples MW-6 (280-83006-1)[50X], MW-7 (280-83006-2)[2X], MW-7 (280-83006-2)[50X], MW-8 (280-83006-3)[2X], MW-8 (280-83006-3) [50X], MW-8D (280-83006-4)[2X] and MW-8D (280-83006-4)[50X] 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-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 05/16/2016 and analyzed on 06/07/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4), MW-6EB (280-83006-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead.

The Laboratory Control Sample (LCS) spike recovery is outside the upper QC limit, indicating a potential positive bias for that analyte: LCS 160-251245/2-A. This analyte was not observed above the requested limit in the associated samples; therefore the sample data was not adversely affected by this excursion. 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.

RADIUM-228
Samples MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 05/16/2016 and analyzed on 05/27/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4), MW-6EB (280-83006-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead.

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-6 (280-83006-1), MW-7 (280-83006-2), MW-8 (280-83006-3), MW-8D (280-83006-4) and MW-6EB (280-83006-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 06/08/2016.

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 - Hayden

TestAmerica Job ID: 280-83006-1

Client Sample ID: MW-6 — Lab Sample ID: 280-83006-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00030	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0019	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.012		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00034	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cadmium	0.00024	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Cobalt	0.00045	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.2		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lead	0.00021	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00018	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
Boron	40		10	5.5	mg/L	500		6020A	Total Recoverable
Lithium	0.14		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.24	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	19.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	40	J	150	13	mg/L	50		9056A	Total/NA
Sulfate	3200		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	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-7 — Lab Sample ID: 280-83006-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00047	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0016	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.0057		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00051	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	410		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cadmium	0.00021	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Cobalt	0.00016	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.0		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lead	0.00025	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Selenium	0.011		0.0050	0.00025	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 - Hayden

TestAmerica Job ID: 280-83006-1

Client Sample ID: MW-7 (Continued) — Lab Sample ID: 280-83006-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Thallium	0.00018	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
Boron	52		10	5.5	mg/L	500		6020A	Total Recoverable
Lithium	0.28		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.68	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	19.8	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	120		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.23	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3200		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4800		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-83006-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00023	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0033	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.0066		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00021	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	450		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cadmium	0.000088	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Cobalt	0.00026	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Chromium	0.0016	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0042	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lead	0.00019	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Selenium	0.040		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Boron	0.81		0.40	0.22	mg/L	20		6020A	Total Recoverable
Lithium	0.64		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.38	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	19.9	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	210		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.12	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	5300		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7900		100	47	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-8D — Lab Sample ID: 280-83006-4

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-83006-1

Client Sample ID: MW-8D (Continued) — Lab Sample ID: 280-83006-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00017	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0034	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.0068		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00013	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	450		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cadmium	0.000080	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Cobalt	0.00023	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0019	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lead	0.00015	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Selenium	0.041		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Boron	0.78		0.40	0.22	mg/L	20		6020A	Total Recoverable
Lithium	0.64		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.34	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	19.2	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	210		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.12	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	5300		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8100		100	47	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-6EB — Lab Sample ID: 280-83006-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.00013	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Cobalt	0.000036	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Chromium	0.0016	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0027	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Lithium	0.00055	J	0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	5.86	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	19.9	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Sulfate	2.6	J	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	430		100	47	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 - Hayden

TestAmerica Job ID: 280-83006-1

Method	Method Description	Protocol	Laboratory
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

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 - Hayden

TestAmerica Job ID: 280-83006-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-83006-1	MW-6	Ground Water	05/10/16 12:20	05/11/16 07:49
280-83006-2	MW-7	Ground Water	05/10/16 10:20	05/11/16 07:49
280-83006-3	MW-8	Ground Water	05/09/16 16:05	05/11/16 07:49
280-83006-4	MW-8D	Ground Water	05/09/16 16:05	05/11/16 07:49
280-83006-5	MW-6EB	Ground Water	05/10/16 12:20	05/11/16 07:49

Client Sample Results

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

TestAmerica Job ID: 280-83006-1

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

Client Sample ID: MW-6
Date Collected: 05/10/16 12:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00030	J	0.0020	0.00016	mg/L		05/16/16 10:06	05/30/16 08:44	1
Arsenic	0.0019	J	0.0050	0.00049	mg/L		05/16/16 10:06	05/30/16 08:44	1
Barium	0.012		0.0050	0.0011	mg/L		05/16/16 10:06	05/30/16 08:44	1
Beryllium	0.00034	J	0.0010	0.000053	mg/L		05/16/16 10:06	05/30/16 08:44	1
Calcium	390		1.0	0.24	mg/L		05/16/16 10:06	05/30/16 08:44	1
Cadmium	0.00024	J	0.0010	0.000061	mg/L		05/16/16 10:06	05/30/16 08:44	1
Cobalt	0.00045	J	0.0010	0.000021	mg/L		05/16/16 10:06	05/30/16 08:44	1
Chromium	ND		0.0020	0.00060	mg/L		05/16/16 10:06	05/30/16 08:44	1
Molybdenum	1.2		0.010	0.00023	mg/L		05/16/16 10:06	05/30/16 08:44	1
Lead	0.00021	J	0.0010	0.00011	mg/L		05/16/16 10:06	05/30/16 08:44	1
Selenium	0.014		0.0050	0.00025	mg/L		05/16/16 10:06	05/30/16 08:44	1
Thallium	0.00018	J	0.0010	0.000074	mg/L		05/16/16 10:06	05/30/16 08:44	1
Boron	40		10	5.5	mg/L		05/16/16 10:06	05/31/16 18:19	500
Lithium	0.14		0.0080	0.00029	mg/L		05/16/16 10:06	05/30/16 08:44	1

Client Sample ID: MW-7
Date Collected: 05/10/16 10:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00047	J	0.0020	0.00016	mg/L		05/16/16 10:06	05/30/16 09:04	1
Arsenic	0.0016	J	0.0050	0.00049	mg/L		05/16/16 10:06	05/30/16 09:04	1
Barium	0.0057		0.0050	0.0011	mg/L		05/16/16 10:06	05/30/16 09:04	1
Beryllium	0.00051	J	0.0010	0.000053	mg/L		05/16/16 10:06	05/30/16 09:04	1
Calcium	410		1.0	0.24	mg/L		05/16/16 10:06	05/30/16 09:04	1
Cadmium	0.00021	J	0.0010	0.000061	mg/L		05/16/16 10:06	05/30/16 09:04	1
Cobalt	0.00016	J	0.0010	0.000021	mg/L		05/16/16 10:06	05/30/16 09:04	1
Chromium	ND		0.0020	0.00060	mg/L		05/16/16 10:06	05/30/16 09:04	1
Molybdenum	1.0		0.010	0.00023	mg/L		05/16/16 10:06	05/30/16 09:04	1
Lead	0.00025	J	0.0010	0.00011	mg/L		05/16/16 10:06	05/30/16 09:04	1
Selenium	0.011		0.0050	0.00025	mg/L		05/16/16 10:06	05/30/16 09:04	1
Thallium	0.00018	J	0.0010	0.000074	mg/L		05/16/16 10:06	05/30/16 09:04	1
Boron	52		10	5.5	mg/L		05/16/16 10:06	05/31/16 18:39	500
Lithium	0.28		0.0080	0.00029	mg/L		05/16/16 10:06	05/30/16 09:04	1

Client Sample ID: MW-8
Date Collected: 05/09/16 16:05
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00023	J	0.0020	0.00016	mg/L		05/16/16 10:06	05/30/16 09:08	1
Arsenic	0.0033	J	0.0050	0.00049	mg/L		05/16/16 10:06	05/30/16 09:08	1
Barium	0.0066		0.0050	0.0011	mg/L		05/16/16 10:06	05/30/16 09:08	1
Beryllium	0.00021	J	0.0010	0.000053	mg/L		05/16/16 10:06	05/30/16 09:08	1
Calcium	450		1.0	0.24	mg/L		05/16/16 10:06	05/30/16 09:08	1
Cadmium	0.000088	J	0.0010	0.000061	mg/L		05/16/16 10:06	05/30/16 09:08	1
Cobalt	0.00026	J	0.0010	0.000021	mg/L		05/16/16 10:06	05/30/16 09:08	1
Chromium	0.0016	J	0.0020	0.00060	mg/L		05/16/16 10:06	05/30/16 09:08	1
Molybdenum	0.0042	J	0.010	0.00023	mg/L		05/16/16 10:06	05/30/16 09:08	1
Lead	0.00019	J	0.0010	0.00011	mg/L		05/16/16 10:06	05/30/16 09:08	1
Selenium	0.040		0.0050	0.00025	mg/L		05/16/16 10:06	05/30/16 09:08	1
Thallium	ND		0.0010	0.000074	mg/L		05/16/16 10:06	05/30/16 09:08	1

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

Client Sample ID: MW-8 — **Lab Sample ID: 280-83006-3**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.81		0.40	0.22	mg/L		05/16/16 10:06	05/31/16 18:43	20
Lithium	0.64		0.0080	0.00029	mg/L		05/16/16 10:06	05/30/16 09:08	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-83006-4**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00017	J	0.0020	0.00016	mg/L		05/16/16 10:06	05/30/16 09:12	1
Arsenic	0.0034	J	0.0050	0.00049	mg/L		05/16/16 10:06	05/30/16 09:12	1
Barium	0.0068		0.0050	0.0011	mg/L		05/16/16 10:06	05/30/16 09:12	1
Beryllium	0.00013	J	0.0010	0.000053	mg/L		05/16/16 10:06	05/30/16 09:12	1
Calcium	450		1.0	0.24	mg/L		05/16/16 10:06	05/30/16 09:12	1
Cadmium	0.000080	J	0.0010	0.000061	mg/L		05/16/16 10:06	05/30/16 09:12	1
Cobalt	0.00023	J	0.0010	0.000021	mg/L		05/16/16 10:06	05/30/16 09:12	1
Chromium	0.0017	J	0.0020	0.00060	mg/L		05/16/16 10:06	05/30/16 09:12	1
Molybdenum	0.0019	J	0.010	0.00023	mg/L		05/16/16 10:06	05/30/16 09:12	1
Lead	0.00015	J	0.0010	0.00011	mg/L		05/16/16 10:06	05/30/16 09:12	1
Selenium	0.041		0.0050	0.00025	mg/L		05/16/16 10:06	05/30/16 09:12	1
Thallium	ND		0.0010	0.000074	mg/L		05/16/16 10:06	05/30/16 09:12	1
Boron	0.78		0.40	0.22	mg/L		05/16/16 10:06	05/31/16 18:56	20
Lithium	0.64		0.0080	0.00029	mg/L		05/16/16 10:06	05/30/16 09:12	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-83006-5**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		05/16/16 10:06	05/30/16 09:24	1
Arsenic	ND		0.0050	0.00049	mg/L		05/16/16 10:06	05/30/16 09:24	1
Barium	ND		0.0050	0.0011	mg/L		05/16/16 10:06	05/30/16 09:24	1
Beryllium	0.00013	J	0.0010	0.000053	mg/L		05/16/16 10:06	05/30/16 09:24	1
Calcium	ND		1.0	0.24	mg/L		05/16/16 10:06	05/30/16 09:24	1
Cadmium	ND		0.0010	0.000061	mg/L		05/16/16 10:06	05/30/16 09:24	1
Cobalt	0.000036	J	0.0010	0.000021	mg/L		05/16/16 10:06	05/30/16 09:24	1
Chromium	0.0016	J	0.0020	0.00060	mg/L		05/16/16 10:06	05/30/16 09:24	1
Molybdenum	0.0027	J	0.010	0.00023	mg/L		05/16/16 10:06	05/30/16 09:24	1
Lead	ND		0.0010	0.00011	mg/L		05/16/16 10:06	05/30/16 09:24	1
Selenium	ND		0.0050	0.00025	mg/L		05/16/16 10:06	05/30/16 09:24	1
Thallium	ND		0.0010	0.000074	mg/L		05/16/16 10:06	05/30/16 09:24	1
Boron	ND		0.020	0.011	mg/L		05/16/16 10:06	06/01/16 11:39	1
Lithium	0.00055	J	0.0080	0.00029	mg/L		05/16/16 10:06	05/30/16 09:24	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-83006-1**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/20/16 10:45	05/20/16 17:12	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7 — **Lab Sample ID: 280-83006-2**
Date Collected: 05/10/16 10:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/20/16 10:45	05/20/16 17:14	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-83006-3**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/20/16 10:45	05/20/16 17:17	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-83006-4**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/20/16 10:45	05/20/16 17:24	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-83006-5**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/20/16 10:45	05/20/16 17:26	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-83006-1**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.24	HF	0.100	0.100	SU			05/11/16 22:17	1
Temperature	19.5	HF	1.00	1.00	Degrees C			05/11/16 22:17	1
Chloride	40	J	150	13	mg/L			05/27/16 23:20	50
Fluoride	ND		25	3.0	mg/L			05/27/16 23:20	50
Sulfate	3200		250	12	mg/L			05/27/16 23:20	50
Total Dissolved Solids (TDS)	4500		40	19	mg/L			05/13/16 11:29	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			05/11/16 18:39	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-83006-2**
Date Collected: 05/10/16 10:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.68	HF	0.100	0.100	SU			05/11/16 22:14	1
Temperature	19.8	HF	1.00	1.00	Degrees C			05/11/16 22:14	1
Chloride	120		6.0	0.51	mg/L			05/27/16 15:13	2
Fluoride	0.23	J	1.0	0.12	mg/L			05/27/16 15:13	2
Sulfate	3200		250	12	mg/L			05/28/16 00:27	50
Total Dissolved Solids (TDS)	4800		40	19	mg/L			05/13/16 11:29	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			05/11/16 18:39	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-83006-3**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.38	HF	0.100	0.100	SU			05/11/16 22:10	1

General Chemistry (Continued)

Client Sample ID: MW-8 — **Lab Sample ID: 280-83006-3**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	19.9	HF	1.00	1.00	Degrees C			05/11/16 22:10	1
Chloride	210		6.0	0.51	mg/L			05/27/16 15:30	2
Fluoride	0.12	J	1.0	0.12	mg/L			05/27/16 15:30	2
Sulfate	5300		250	12	mg/L			05/28/16 00:44	50
Total Dissolved Solids (TDS)	7900		100	47	mg/L			05/13/16 11:29	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			05/11/16 18:39	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-83006-4**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.34	HF	0.100	0.100	SU			05/11/16 21:53	1
Temperature	19.2	HF	1.00	1.00	Degrees C			05/11/16 21:53	1
Chloride	210		6.0	0.51	mg/L			05/27/16 16:37	2
Fluoride	0.12	J	1.0	0.12	mg/L			05/27/16 16:37	2
Sulfate	5300		250	12	mg/L			05/28/16 01:01	50
Total Dissolved Solids (TDS)	8100		100	47	mg/L			05/13/16 11:29	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			05/11/16 18:39	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-83006-5**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.86	HF	0.100	0.100	SU			05/12/16 20:56	1
Temperature	19.9	HF	1.00	1.00	Degrees C			05/12/16 20:56	1
Chloride	ND		3.0	0.25	mg/L			05/31/16 16:14	1
Fluoride	ND		0.50	0.060	mg/L			05/31/16 16:14	1
Sulfate	2.6	J	5.0	0.23	mg/L			05/31/16 16:14	1
Total Dissolved Solids (TDS)	430		100	47	mg/L			05/12/16 10:09	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/11/16 18:39	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-83006-1**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.125	*	0.0602	0.0613	1.00	0.0779	pCi/L	05/16/16 12:56	06/07/16 07:48	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.2*		*40 - 110*	*05/16/16 12:56*	*06/07/16 07:48*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-83006-2**
Date Collected: 05/10/16 10:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0901	*	0.0488	0.0495	1.00	0.0607	pCi/L	05/16/16 12:56	06/07/16 07:48	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.5		40 - 110	05/16/16 12:56	06/07/16 07:48	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-83006-3**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0985	*	0.0475	0.0484	1.00	0.0558	pCi/L	05/16/16 12:56	06/07/16 07:48	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		40 - 110	05/16/16 12:56	06/07/16 07:48	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-83006-4**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.136	*	0.0535	0.0549	1.00	0.0560	pCi/L	05/16/16 12:56	06/07/16 07:49	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.6		40 - 110	05/16/16 12:56	06/07/16 07:49	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-83006-5**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00806	U *	0.0470	0.0470	1.00	0.0917	pCi/L	05/16/16 12:56	06/07/16 07:49	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110	05/16/16 12:56	06/07/16 07:49	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-83006-1**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.155	U	0.240	0.241	1.00	0.404	pCi/L	05/16/16 13:49	05/27/16 11:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	89.2		40 - 110	05/16/16 13:49	05/27/16 11:52	1
Y Carrier	92.3		40 - 110	05/16/16 13:49	05/27/16 11:52	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-83006-2**
Date Collected: 05/10/16 10:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0895	U	0.194	0.194	1.00	0.335	pCi/L	05/16/16 13:49	05/27/16 11:52	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.5		40 - 110	05/16/16 13:49	05/27/16 11:52	1
Y Carrier	90.5		40 - 110	05/16/16 13:49	05/27/16 11:52	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-83006-3**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.140	U	0.202	0.202	1.00	0.338	pCi/L	05/16/16 13:49	05/27/16 11:53	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.7		40 - 110	05/16/16 13:49	05/27/16 11:53	1
Y Carrier	84.5		40 - 110	05/16/16 13:49	05/27/16 11:53	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-83006-4**
Date Collected: 05/09/16 16:05 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.341**		0.197	0.200	1.00	0.296	pCi/L	05/16/16 13:49	05/27/16 11:53	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.6		40 - 110	05/16/16 13:49	05/27/16 11:53	1
Y Carrier	94.2		40 - 110	05/16/16 13:49	05/27/16 11:53	1

Client Sample ID: MW-6EB — **Lab Sample ID: 280-83006-5**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.00781	U	0.191	0.192	1.00	0.346	pCi/L	05/16/16 13:49	05/27/16 11:53	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110	05/16/16 13:49	05/27/16 11:53	1
Y Carrier	90.8		40 - 110	05/16/16 13:49	05/27/16 11:53	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-83006-1**
Date Collected: 05/10/16 12:20 — **Matrix: Ground Water**
Date Received: 05/11/16 07:49

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.280	U	0.248	0.248	5.00	0.404	pCi/L		06/08/16 18:42	1

Client Sample Results

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

TestAmerica Job ID: 280-83006-1

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

Client Sample ID: MW-7
Date Collected: 05/10/16 10:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.180	U	0.200	0.201	5.00	0.335	pCi/L		06/08/16 18:42	1

Client Sample ID: MW-8
Date Collected: 05/09/16 16:05
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.238	U	0.207	0.208	5.00	0.338	pCi/L		06/08/16 18:42	1

Client Sample ID: MW-8D
Date Collected: 05/09/16 16:05
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.477**		0.204	0.207	5.00	0.296	pCi/L		06/08/16 18:42	1

Client Sample ID: MW-6EB
Date Collected: 05/10/16 12:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-5
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0159	U	0.197	0.197	5.00	0.346	pCi/L		06/08/16 18:42	1

QC Sample Results

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

TestAmerica Job ID: 280-83006-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-230441/1-A
Matrix: Water
Analysis Batch: 232478

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 230441

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		05/16/16 10:06	05/30/16 08:36	1
Arsenic	ND		0.0050	0.00049	mg/L		05/16/16 10:06	05/30/16 08:36	1
Barium	ND		0.0050	0.0011	mg/L		05/16/16 10:06	05/30/16 08:36	1
Beryllium	ND		0.0010	0.000053	mg/L		05/16/16 10:06	05/30/16 08:36	1
Calcium	ND		1.0	0.24	mg/L		05/16/16 10:06	05/30/16 08:36	1
Cadmium	ND		0.0010	0.000061	mg/L		05/16/16 10:06	05/30/16 08:36	1
Cobalt	ND		0.0010	0.000021	mg/L		05/16/16 10:06	05/30/16 08:36	1
Chromium	ND		0.0020	0.00060	mg/L		05/16/16 10:06	05/30/16 08:36	1
Molybdenum	ND		0.010	0.00023	mg/L		05/16/16 10:06	05/30/16 08:36	1
Lead	ND		0.0010	0.00011	mg/L		05/16/16 10:06	05/30/16 08:36	1
Selenium	ND		0.0050	0.00025	mg/L		05/16/16 10:06	05/30/16 08:36	1
Thallium	ND		0.0010	0.000074	mg/L		05/16/16 10:06	05/30/16 08:36	1
Lithium	ND		0.0080	0.00029	mg/L		05/16/16 10:06	05/30/16 08:36	1

Lab Sample ID: MB 240-230441/1-A
Matrix: Water
Analysis Batch: 232649

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 230441

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020	0.011	mg/L		05/16/16 10:06	05/31/16 18:11	1

Lab Sample ID: LCS 240-230441/2-A
Matrix: Water
Analysis Batch: 232478

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 230441

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0988		mg/L		99	80 - 120
Arsenic	1.00	1.02		mg/L		102	80 - 120
Barium	1.00	0.987		mg/L		99	80 - 120
Beryllium	1.00	1.01		mg/L		101	80 - 120
Calcium	10.0	9.35		mg/L		94	80 - 120
Cadmium	1.00	1.03		mg/L		103	80 - 120
Cobalt	1.00	1.04		mg/L		104	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.101		mg/L		101	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.04		mg/L		104	80 - 120
Thallium	0.250	0.257		mg/L		103	80 - 120
Lithium	0.100	0.101		mg/L		101	80 - 120

Lab Sample ID: LCS 240-230441/2-A
Matrix: Water
Analysis Batch: 232649

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 230441

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.100	0.100		mg/L		100	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-83006-1 MS — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total Recoverable**
Analysis Batch: 232478 — **Prep Batch: 230441**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.00030	J	0.100	0.0981		mg/L		98	75 - 125
Arsenic	0.0019	J	1.00	1.09		mg/L		108	75 - 125
Barium	0.012		1.00	1.00		mg/L		99	75 - 125
Beryllium	0.00034	J	1.00	0.942		mg/L		94	75 - 125
Calcium	390		10.0	413	4	mg/L		221	75 - 125
Cadmium	0.00024	J	1.00	0.944		mg/L		94	75 - 125
Cobalt	0.00045	J	1.00	0.958		mg/L		96	75 - 125
Chromium	ND		1.00	0.949		mg/L		95	75 - 125
Molybdenum	1.2		0.100	1.31	4	mg/L		133	75 - 125
Lead	0.00021	J	1.00	0.982		mg/L		98	75 - 125
Selenium	0.014		1.00	1.13		mg/L		111	75 - 125
Thallium	0.00018	J	0.250	0.250		mg/L		100	75 - 125
Lithium	0.14		0.100	0.239		mg/L		96	75 - 125

Lab Sample ID: 280-83006-1 MS — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total Recoverable**
Analysis Batch: 232649 — **Prep Batch: 230441**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	40		0.100	40.9	4	mg/L		720	75 - 125

Lab Sample ID: 280-83006-1 MSD — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total Recoverable**
Analysis Batch: 232478 — **Prep Batch: 230441**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.00030	J	0.100	0.0983		mg/L		98	75 - 125	0	20
Arsenic	0.0019	J	1.00	1.09		mg/L		109	75 - 125	0	20
Barium	0.012		1.00	1.01		mg/L		99	75 - 125	0	20
Beryllium	0.00034	J	1.00	0.948		mg/L		95	75 - 125	1	20
Calcium	390		10.0	402	4	mg/L		112	75 - 125	3	20
Cadmium	0.00024	J	1.00	0.952		mg/L		95	75 - 125	1	20
Cobalt	0.00045	J	1.00	0.965		mg/L		96	75 - 125	1	20
Chromium	ND		1.00	0.960		mg/L		96	75 - 125	1	20
Molybdenum	1.2		0.100	1.28	4	mg/L		105	75 - 125	2	20
Lead	0.00021	J	1.00	1.00		mg/L		100	75 - 125	2	20
Selenium	0.014		1.00	1.13		mg/L		112	75 - 125	1	20
Thallium	0.00018	J	0.250	0.257		mg/L		103	75 - 125	3	20
Lithium	0.14		0.100	0.238		mg/L		95	75 - 125	0	20

Lab Sample ID: 280-83006-1 MSD — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total Recoverable**
Analysis Batch: 232649 — **Prep Batch: 230441**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	40		0.100	39.9	4	mg/L		-209	75 - 125	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-325161/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 326380 — **Prep Batch: 325161**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/20/16 10:45	05/20/16 16:47	1

Lab Sample ID: LCS 280-325161/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 326380 — **Prep Batch: 325161**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.16		ug/L		103	84 - 120

Lab Sample ID: LCSD 280-325161/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 326380 — **Prep Batch: 325161**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	5.00	5.09		ug/L		102	84 - 120	1	15

Method: 9040B - pH

Lab Sample ID: LCS 280-325070/27 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 325070

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	6.970		SU		100	99 - 101

Lab Sample ID: 280-83006-4 DU — **Client Sample ID: MW-8D**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 325070

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.34	HF	7.350		SU		0.1	5
Temperature	19.2	HF	19.36		Degrees C		1	10

Lab Sample ID: LCS 280-325290/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 325290

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	6.960		SU		99	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-327355/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			05/27/16 12:24	1
Fluoride	ND		0.50	0.060	mg/L			05/27/16 12:24	1

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

Lab Sample ID: MB 280-327355/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			05/27/16 12:24	1

Lab Sample ID: LCS 280-327355/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.5		mg/L		100	90 - 110
Fluoride	5.00	5.15		mg/L		103	90 - 110
Sulfate	100	99.6		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-327355/12 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.4		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.14		mg/L		103	90 - 110	0	10
Sulfate	100	99.6		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-327355/10 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.78	J	mg/L		111	50 - 150
Fluoride	0.200	0.191	J	mg/L		96	50 - 150
Sulfate	2.50	2.57	J	mg/L		103	50 - 150

Lab Sample ID: 280-83006-1 MS — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	40	J	1250	1320		mg/L		103	80 - 120
Fluoride	ND		250	235		mg/L		94	80 - 120
Sulfate	3200		1250	4430		mg/L		95	80 - 120

Lab Sample ID: 280-83006-1 MSD — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	40	J	1250	1330		mg/L		103	80 - 120	0	20
Fluoride	ND		250	237		mg/L		95	80 - 120	1	20
Sulfate	3200		1250	4430		mg/L		95	80 - 120	0	20

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

Lab Sample ID: 280-83006-1 DU — **Client Sample ID: MW-6**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 327355

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	40	J	39.7	J	mg/L		0.5	15
Fluoride	ND		ND		mg/L		NC	15
Sulfate	3200		3210		mg/L		0.8	15

Lab Sample ID: MB 280-327735/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327735

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			05/31/16 14:45	1
Fluoride	ND		0.50	0.060	mg/L			05/31/16 14:45	1
Sulfate	ND		5.0	0.23	mg/L			05/31/16 14:45	1

Lab Sample ID: LCS 280-327735/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327735

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	92.9		mg/L		93	90 - 110
Fluoride	5.00	4.77		mg/L		95	90 - 110
Sulfate	100	93.3		mg/L		93	90 - 110

Lab Sample ID: LCSD 280-327735/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327735

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	93.2		mg/L		93	90 - 110	0	10
Fluoride	5.00	4.83		mg/L		97	90 - 110	1	10
Sulfate	100	93.7		mg/L		94	90 - 110	0	10

Lab Sample ID: MRL 280-327735/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 327735

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.20	J	mg/L		88	50 - 150
Fluoride	0.200	0.149	J	mg/L		75	50 - 150
Sulfate	2.50	2.24	J	mg/L		90	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-325017/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 325017

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/12/16 10:09	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-325017/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 325017

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	494		mg/L		99	86 - 110

Lab Sample ID: MB 280-325207/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 325207

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/13/16 11:29	1

Lab Sample ID: LCS 280-325207/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 325207

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	488		mg/L		97	86 - 110

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

Lab Sample ID: MB 280-324909/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 324909

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			05/11/16 18:39	1

Lab Sample ID: LCS 280-324909/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 324909

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.0		mg/L		92	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-251245/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 255206 — **Prep Batch: 251245**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03990	U	0.0450	0.0451	1.00	0.0731	pCi/L	05/16/16 12:56	06/07/16 07:47	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*05/16/16 12:56*	*06/07/16 07:47*	*1*

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

Lab Sample ID: LCS 160-251245/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 255206 — **Prep Batch: 251245**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	15.41	*	1.48	1.00	0.0839	pCi/L	138	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*82.3*		*40 - 110*

Lab Sample ID: LCSD 160-251245/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 255206 — **Prep Batch: 251245**

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.2	13.65		1.31	1.00	0.0573	pCi/L	122	68 - 137	0.63	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*94.6*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-251257/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 253648 — **Prep Batch: 251257**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.07427	U	0.224	0.225	1.00	0.391	pCi/L	05/16/16 13:49	05/27/16 11:52	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*05/16/16 13:49*	*05/27/16 11:52*	*1*
Y Carrier	*86.4*		*40 - 110*	*05/16/16 13:49*	*05/27/16 11:52*	*1*

Lab Sample ID: LCS 160-251257/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 253648 — **Prep Batch: 251257**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			15.1	19.32		2.00	1.00	0.358	pCi/L	128	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.0*		*40 - 110*
Y Carrier	*89.3*		*40 - 110*

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

Lab Sample ID: LCSD 160-251257/3-A
Matrix: Water
Analysis Batch: 253648

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 251257

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			15.1	19.43		1.99	1.00	0.312	pCi/L	129	56 - 140	0.03	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*94.6*		*40 - 110*
Y Carrier	*90.8*		*40 - 110*

QC Association Summary

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

TestAmerica Job ID: 280-83006-1

Metals

Prep Batch: 230441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total Recoverable	Ground Water	3005A	
280-83006-1 MS	MW-6	Total Recoverable	Ground Water	3005A	
280-83006-1 MSD	MW-6	Total Recoverable	Ground Water	3005A	
280-83006-2	MW-7	Total Recoverable	Ground Water	3005A	
280-83006-3	MW-8	Total Recoverable	Ground Water	3005A	
280-83006-4	MW-8D	Total Recoverable	Ground Water	3005A	
280-83006-5	MW-6EB	Total Recoverable	Ground Water	3005A	
LCS 240-230441/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-230441/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 232478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total Recoverable	Ground Water	6020A	230441
280-83006-1 MS	MW-6	Total Recoverable	Ground Water	6020A	230441
280-83006-1 MSD	MW-6	Total Recoverable	Ground Water	6020A	230441
280-83006-2	MW-7	Total Recoverable	Ground Water	6020A	230441
280-83006-3	MW-8	Total Recoverable	Ground Water	6020A	230441
280-83006-4	MW-8D	Total Recoverable	Ground Water	6020A	230441
280-83006-5	MW-6EB	Total Recoverable	Ground Water	6020A	230441
LCS 240-230441/2-A	Lab Control Sample	Total Recoverable	Water	6020A	230441
MB 240-230441/1-A	Method Blank	Total Recoverable	Water	6020A	230441

Analysis Batch: 232649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total Recoverable	Ground Water	6020A	230441
280-83006-1 MS	MW-6	Total Recoverable	Ground Water	6020A	230441
280-83006-1 MSD	MW-6	Total Recoverable	Ground Water	6020A	230441
280-83006-2	MW-7	Total Recoverable	Ground Water	6020A	230441
280-83006-3	MW-8	Total Recoverable	Ground Water	6020A	230441
280-83006-4	MW-8D	Total Recoverable	Ground Water	6020A	230441
LCS 240-230441/2-A	Lab Control Sample	Total Recoverable	Water	6020A	230441
MB 240-230441/1-A	Method Blank	Total Recoverable	Water	6020A	230441

Analysis Batch: 232729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-5	MW-6EB	Total Recoverable	Ground Water	6020A	230441

Prep Batch: 325161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	7470A	
280-83006-2	MW-7	Total/NA	Ground Water	7470A	
280-83006-3	MW-8	Total/NA	Ground Water	7470A	
280-83006-4	MW-8D	Total/NA	Ground Water	7470A	
280-83006-5	MW-6EB	Total/NA	Ground Water	7470A	
LCS 280-325161/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-325161/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	
MB 280-325161/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 326380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	7470A	325161

Metals (Continued)

Analysis Batch: 326380 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-2	MW-7	Total/NA	Ground Water	7470A	325161
280-83006-3	MW-8	Total/NA	Ground Water	7470A	325161
280-83006-4	MW-8D	Total/NA	Ground Water	7470A	325161
280-83006-5	MW-6EB	Total/NA	Ground Water	7470A	325161
LCS 280-325161/2-A	Lab Control Sample	Total/NA	Water	7470A	325161
LCSD 280-325161/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	325161
MB 280-325161/1-A	Method Blank	Total/NA	Water	7470A	325161

General Chemistry

Analysis Batch: 324909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	SM 2540D	
280-83006-2	MW-7	Total/NA	Ground Water	SM 2540D	
280-83006-3	MW-8	Total/NA	Ground Water	SM 2540D	
280-83006-4	MW-8D	Total/NA	Ground Water	SM 2540D	
280-83006-5	MW-6EB	Total/NA	Ground Water	SM 2540D	
LCS 280-324909/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-324909/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 325017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-5	MW-6EB	Total/NA	Ground Water	SM 2540C	
LCS 280-325017/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-325017/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 325070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	9040B	
280-83006-2	MW-7	Total/NA	Ground Water	9040B	
280-83006-3	MW-8	Total/NA	Ground Water	9040B	
280-83006-4	MW-8D	Total/NA	Ground Water	9040B	
280-83006-4 DU	MW-8D	Total/NA	Ground Water	9040B	
LCS 280-325070/27	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 325207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	SM 2540C	
280-83006-2	MW-7	Total/NA	Ground Water	SM 2540C	
280-83006-3	MW-8	Total/NA	Ground Water	SM 2540C	
280-83006-4	MW-8D	Total/NA	Ground Water	SM 2540C	
LCS 280-325207/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-325207/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 325290

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-5	MW-6EB	Total/NA	Ground Water	9040B	
LCS 280-325290/4	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 327355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	9056A	
280-83006-1 DU	MW-6	Total/NA	Ground Water	9056A	
280-83006-1 MS	MW-6	Total/NA	Ground Water	9056A	
280-83006-1 MSD	MW-6	Total/NA	Ground Water	9056A	
280-83006-2	MW-7	Total/NA	Ground Water	9056A	
280-83006-2	MW-7	Total/NA	Ground Water	9056A	
280-83006-3	MW-8	Total/NA	Ground Water	9056A	
280-83006-3	MW-8	Total/NA	Ground Water	9056A	
280-83006-4	MW-8D	Total/NA	Ground Water	9056A	
280-83006-4	MW-8D	Total/NA	Ground Water	9056A	
LCS 280-327355/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-327355/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-327355/13	Method Blank	Total/NA	Water	9056A	
MRL 280-327355/10	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 327735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-5	MW-6EB	Total/NA	Ground Water	9056A	
LCS 280-327735/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-327735/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-327735/6	Method Blank	Total/NA	Water	9056A	
MRL 280-327735/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 251245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	PrecSep-21	
280-83006-2	MW-7	Total/NA	Ground Water	PrecSep-21	
280-83006-3	MW-8	Total/NA	Ground Water	PrecSep-21	
280-83006-4	MW-8D	Total/NA	Ground Water	PrecSep-21	
280-83006-5	MW-6EB	Total/NA	Ground Water	PrecSep-21	
LCS 160-251245/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-251245/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	
MB 160-251245/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 251257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-83006-1	MW-6	Total/NA	Ground Water	PrecSep_0	
280-83006-2	MW-7	Total/NA	Ground Water	PrecSep_0	
280-83006-3	MW-8	Total/NA	Ground Water	PrecSep_0	
280-83006-4	MW-8D	Total/NA	Ground Water	PrecSep_0	
280-83006-5	MW-6EB	Total/NA	Ground Water	PrecSep_0	
LCS 160-251257/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-251257/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-251257/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-83006-1

Client Sample ID: MW-6

Date Collected: 05/10/16 12:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-1
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	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	232478	05/30/16 08:44	AMM2	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	232649	05/31/16 18:19	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325161	05/20/16 10:45	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	326380	05/20/16 17:12	CDH	TAL DEN
Total/NA	Analysis	9040B		1			325070	05/11/16 22:17	MAS	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	327355	05/27/16 23:20	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	325207	05/13/16 11:29	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324909	05/11/16 18:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.16 mL	1.0 g	251245	05/16/16 12:56	MCJ	TAL SL
Total/NA	Analysis	9315		1	999.16 mL		255206	06/07/16 07:48	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.16 mL	1.0 g	251257	05/16/16 13:49	MCJ	TAL SL
Total/NA	Analysis	9320		1	999.16 mL		253648	05/27/16 11:52	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			255527	06/08/16 18:42	RTM	TAL SL

Client Sample ID: MW-7

Date Collected: 05/10/16 10:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-2
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	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	232478	05/30/16 09:04	AMM2	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		500	50 mL	50 mL	232649	05/31/16 18:39	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325161	05/20/16 10:45	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	326380	05/20/16 17:14	CDH	TAL DEN
Total/NA	Analysis	9040B		1			325070	05/11/16 22:14	MAS	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	327355	05/27/16 15:13	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	327355	05/28/16 00:27	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	325207	05/13/16 11:29	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324909	05/11/16 18:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.01 mL	1.0 g	251245	05/16/16 12:56	MCJ	TAL SL
Total/NA	Analysis	9315		1	1000.01 mL		255206	06/07/16 07:48	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.01 mL	1.0 g	251257	05/16/16 13:49	MCJ	TAL SL
Total/NA	Analysis	9320		1	1000.01 mL		253648	05/27/16 11:52	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			255527	06/08/16 18:42	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-83006-1

Client Sample ID: MW-8

Date Collected: 05/09/16 16:05
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-3
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	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	232478	05/30/16 09:08	AMM2	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	232649	05/31/16 18:43	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325161	05/20/16 10:45	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	326380	05/20/16 17:17	CDH	TAL DEN
Total/NA	Analysis	9040B		1			325070	05/11/16 22:10	MAS	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	327355	05/27/16 15:30	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	327355	05/28/16 00:44	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	325207	05/13/16 11:29	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324909	05/11/16 18:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.28 mL	1.0 g	251245	05/16/16 12:56	MCJ	TAL SL
Total/NA	Analysis	9315		1	1000.28 mL		255206	06/07/16 07:48	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.28 mL	1.0 g	251257	05/16/16 13:49	MCJ	TAL SL
Total/NA	Analysis	9320		1	1000.28 mL		253648	05/27/16 11:53	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			255527	06/08/16 18:42	RTM	TAL SL

Client Sample ID: MW-8D

Date Collected: 05/09/16 16:05
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-4
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	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	232478	05/30/16 09:12	AMM2	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	232649	05/31/16 18:56	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325161	05/20/16 10:45	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	326380	05/20/16 17:24	CDH	TAL DEN
Total/NA	Analysis	9040B		1			325070	05/11/16 21:53	MAS	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	327355	05/27/16 16:37	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	327355	05/28/16 01:01	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	325207	05/13/16 11:29	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324909	05/11/16 18:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.76 mL	1.0 g	251245	05/16/16 12:56	MCJ	TAL SL
Total/NA	Analysis	9315		1	1000.76 mL		255206	06/07/16 07:49	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.76 mL	1.0 g	251257	05/16/16 13:49	MCJ	TAL SL
Total/NA	Analysis	9320		1	1000.76 mL		253648	05/27/16 11:53	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			255527	06/08/16 18:42	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-83006-1

Client Sample ID: MW-6EB

Date Collected: 05/10/16 12:20
Date Received: 05/11/16 07:49

Lab Sample ID: 280-83006-5

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	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	232478	05/30/16 09:24	AMM2	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	230441	05/16/16 10:06	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	232729	06/01/16 11:39	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325161	05/20/16 10:45	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	326380	05/20/16 17:26	CDH	TAL DEN
Total/NA	Analysis	9040B		1			325290	05/12/16 20:56	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	327735	05/31/16 16:14	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	325017	05/12/16 10:09	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324909	05/11/16 18:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	251245	05/16/16 12:56	MCJ	TAL SL
Total/NA	Analysis	9315		1	1000.13 mL		255206	06/07/16 07:49	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	251257	05/16/16 13:49	MCJ	TAL SL
Total/NA	Analysis	9320		1	1000.13 mL		253648	05/27/16 11:53	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			255527	06/08/16 18:42	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

Certification Summary

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

TestAmerica Job ID: 280-83006-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

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

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Ground Water	Mercury
9040B		Ground Water	Temperature
9056A		Ground Water	Chloride
9056A		Ground Water	Fluoride
9056A		Ground Water	Sulfate

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-16 *
Illinois	NELAP	5	200004	07-31-16 *
Kansas	NELAP	7	E-10336	07-31-16 *
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-16
Nevada	State Program	9	OH-000482008A	07-31-16 *
New Jersey	NELAP	2	OH001	06-30-16 *
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-16 *
Texas	NELAP	6	T104704517-15-5	08-31-16 *
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-16
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16
Wisconsin	State Program	5	999518190	08-31-16 *

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16 *
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16 *
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	07-31-16 *
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-16 *

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-83006-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16 *
Nevada	State Program	9	MO000542016-1	07-31-16 *
New Jersey	NELAP	2	MO002	06-30-16 *
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-16 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16 *
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16 *
Texas	NELAP	6	T104704193-15-9	07-31-16 *
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16 *
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

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

Chain of Custody Record

280-83006 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Tara Kent	Lab PM: Kupper, Stephar	COC No:
Client Contact: Anna Lundin	Phone: 720 933 7496	E-Mail: stephanie.kupper@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 - Hayden	Project #: 28014377		
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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	D	N	N	D		
~~MW-5~~ TK				Water		N							
MW-6	5-10-16	1220	G	Water		N	✓	✓	✓	✓	✓	7	
MW-7	5-10-16	1020	G	Water		N	✓	✓	✓	✓	✓	7	
MW-8	5-9-16	1605	G	Water		N	✓	✓	✓	✓	✓	7	
~~Field Duplicate~~ TK MW-8D	5-9-16	1605	G	Water		N	✓	✓	✓	✓	✓	7	
~~Equipment Blank~~ TK MW-6EB	5-10-16	1220	G	Water		N	✓	✓	✓	✓	✓	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:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
TARA KENT	5/11/16 0749	HDR	[signature]	5/11/16 0749	TA Denver

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: Trans Perbyms 0.7 IR5 -0.1 1.3

6/9/2016

TestAmerica Denver
495[illegible]row 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: Kupper, Stephanie K	Carrier Tracking No(s):	COC No: 280-350957.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-83006-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/7/2016			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-6 (280-83006-1)	5/10/16	12:20 Mountain		Water			X	X	2	
MW-7 (280-83006-2)	5/10/16	10:20 Mountain		Water			X	X	2	
MW-8 (280-83006-3)	5/9/16	16:05 Mountain		Water			X	X	2	
MW-8D (280-83006-4)	5/9/16	16:05 Mountain		Water			X	X	2	
MW-6EB (280-83006-5)	5/10/16	12:20 Mountain		Water			X	X	2	

280-83006 Chain of Custody

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)

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5/2/16 1517		[signature]	05 1316 0820	
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

1.6/C1.1
3.0/C2.5

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kupper, Stephanie K	Carrier Tracking No(s):	COC No: 280-350958.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-83006-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 6/3/2016			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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:

531

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 12 Total Metals (w/collision cell) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-6 (280-83006-1)	5/10/16	12:20 Mountain		Water			X	1	Use Collision Cell
MW-7 (280-83006-2)	5/10/16	10:20 Mountain		Water			X	1	Use Collision Cell
MW-8 (280-83006-3)	5/9/16	16:05 Mountain		Water			X	1	Use Collision Cell
MW-8D (280-83006-4)	5/9/16	16:05 Mountain		Water			X	1	Use Collision Cell
MW-6EB (280-83006-5)	5/10/16	12:20 Mountain		Water			X	1	Use Collision Cell

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)

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/2/16 1517			5-13-16 910	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:

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

Client Denver Site Name _____ Cooler unpacked by: [signature]

Cooler Received on 5-13-16 Opened on 5-13-16

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # _____ 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# 48 (CF -1.9 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN# 36 (CF -1.5 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN# I8 (CF -0.5 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC559158
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? 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

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): _____.

Ref: SOP NC-SC-0005, Sample Receiving
L:\QAQC\QA Department\QA TARDIS\Document Control\Work Instructions\WI-NC-099X-011816 Cooler Receipt Form.doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-83006-1

Login Number: 83006
List Number: 1
Creator: Soto, Mayra A

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").	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: 280-83006-1

Login Number: 83006
List Number: 3
Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis
List Creation: 05/13/16 02:09 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	0.2, 0.1
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 - Hayden

TestAmerica Job ID: 280-83006-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
280-83006-1	MW-6	89.2
280-83006-2	MW-7	87.5
280-83006-3	MW-8	97.7
280-83006-4	MW-8D	98.6
280-83006-5	MW-6EB	92.6

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
LCS 160-251245/2-A	Lab Control Sample	82.3
LCSD 160-251245/3-A	Lab Control Sample Dup	94.6
MB 160-251245/1-A	Method Blank	83.5

Tracer/Carrier Legend

Ba = 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 (40-110)	Y (40-110)
280-83006-1	MW-6	89.2	92.3
280-83006-2	MW-7	87.5	90.5
280-83006-3	MW-8	97.7	84.5
280-83006-4	MW-8D	98.6	94.2
280-83006-5	MW-6EB	92.6	90.8

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
LCS 160-251257/2-A	Lab Control Sample	90.0	89.3
LCSD 160-251257/3-A	Lab Control Sample Dup	94.6	90.8
MB 160-251257/1-A	Method Blank	83.5	86.4

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-87230-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
9/22/2016 9:33:59 AM

Stephanie Rothmeyer, Project Manager I
(303)736-0182
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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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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.
*	LCS or LCSD is outside acceptance limits.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.

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.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
F3	Duplicate RPD exceeds the control limit

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 280-87230-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-87230-1

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.

This report may include data with reporting limits (RLs) less than TestAmerica's standard reporting limit. These data and reporting limits are being used specifically to meet the needs of this project. Note that, data are not customarily reported to these levels without qualifiers, because they are inherently less reliable and potentially less defensible than the latest industry standards require.

RECEIPT
The samples were received on 8/23/2016 at 5:47 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.4º C, 3.1º C and 3.3º C.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/26/2016 and analyzed on 08/31/2016, 09/07/2016 and 09/13/2016.

Barium, Calcium, Lead and Boron were detected in method blank MB 240-244446/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Beryllium failed the recovery criteria high for LCS 240-244446/2-A. The samples associated with this LCS were below the requested reporting limit for the affected analyte; therefore, the data have been reported.

Calcium failed the recovery criteria low for the MS of sample 280-87226-2 in batch 240-245137. Beryllium failed the recovery criteria high. Beryllium and Calcium failed the recovery criteria high for the MSD of sample 280-87226-2 in batch 240-245137. 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-6 (280-87230-1)[500X], MW-7 (280-87230-2)[500X], MW-8 (280-87230-3)[20X] and MW-8D (280-87230-4)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The continuing calibration verification (CCV) associated with batch 240-246594 recovered above the upper control limit for Boron. The samples associated with this CCV were below the requested reporting limit for the affected analyte; therefore, the data have been reported.

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

Job ID: 280-87230-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL MERCURY
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 09/02/2016.

Mercury was detected in method blank MB 280-340473/1-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 DISSOLVED SOLIDS
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/24/2016, 08/25/2016 and 08/30/2016.

The following sample was reanalyzed due to high residue in the original analysis: MW-7 (280-87230-2). The relative percent difference between the analysis was greater than 20%. Sample non-homogeneity is suspected in the original analysis.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/26/2016 and 08/29/2016.

Total Suspended Solids was detected in method blank MB 280-339730/2 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.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-87217-1. Sample non-homogeneity is suspected.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample MW-7 (280-87230-2). 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-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/26/2016 and 09/08/2016.

pH adj. to 25 deg C exceeded the RPD limit for the duplicate of sample 280-87230-5. Sample non-homogeneity is suspected.

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

ANIONS (28 DAYS)
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/07/2016 and 09/08/2016.

Chloride was detected in method blank MB 280-341054/6 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.

Samples MW-6 (280-87230-1)[2X], MW-6 (280-87230-1)[50X], MW-7 (280-87230-2)[2X], MW-7 (280-87230-2)[50X], MW-8 (280-87230-3)[2X], MW-8 (280-87230-3)[50X], MW-8D (280-87230-4)[2X] and MW-8D (280-87230-4)[50X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

Job ID: 280-87230-1 (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-226 (GFPC)
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/30/2016 and analyzed on 09/21/2016.

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

RADIUM-228
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/30/2016 and analyzed on 09/14/2016.

Radium-228 exceeded the RPD limit for the duplicate of sample 400-126077-2. 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/RADIUM-228 (GFPC)
Samples MW-6 (280-87230-1), MW-7 (280-87230-2), MW-8 (280-87230-3), MW-8D (280-87230-4) and MW-8EB (280-87230-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/21/2016.

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 - Hayden

TestAmerica Job ID: 280-87230-1

Client Sample ID: MW-6 — Lab Sample ID: 280-87230-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0020	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0094	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	420	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00030	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.00045	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	1.1		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00020	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Boron	37	B	10	1.3	mg/L	500		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.040	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	8.4	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	46	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.30	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	2900		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-87230-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0013	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0064	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	420	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00050	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.96		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0084		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Boron	45	B	10	1.3	mg/L	500		6020A	Total Recoverable
Lithium	0.25		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.037	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	8.7	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	110	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.19	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	2900		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4900		100	47	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 - Hayden

TestAmerica Job ID: 280-87230-1

Client Sample ID: MW-7 (Continued) — Lab Sample ID: 280-87230-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-87230-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0033	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0064	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	400	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00022	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.00030	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0054	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.037		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Boron	0.71	B	0.40	0.050	mg/L	20		6020A	Total Recoverable
Lithium	0.55		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.045	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.4	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	200	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.17	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4400		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7600		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.8	B	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8D — Lab Sample ID: 280-87230-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0032	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0059	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	390	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00022	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.00067	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0016	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.034		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Boron	0.68	B	0.40	0.050	mg/L	20		6020A	Total Recoverable
Lithium	0.54		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.045	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-87230-1

Client Sample ID: MW-8D (Continued) — Lab Sample ID: 280-87230-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	21.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.18	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4400		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7300		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4	B	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8EB — Lab Sample ID: 280-87230-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00041	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Calcium	0.21	J B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00027	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Boron	0.0063	J B ^	0.020	0.0025	mg/L	1		6020A	Total Recoverable
Lithium	0.00080	J	0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.043	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	6.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	0.63	J B	3.0	0.25	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	6.0	J	10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J B	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 - Hayden

TestAmerica Job ID: 280-87230-1

Method	Method Description	Protocol	Laboratory
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

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 - Hayden

TestAmerica Job ID: 280-87230-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-87230-1	MW-6	Water	08/23/16 10:25	08/23/16 17:47
280-87230-2	MW-7	Water	08/23/16 12:15	08/23/16 17:47
280-87230-3	MW-8	Water	08/22/16 12:55	08/23/16 17:47
280-87230-4	MW-8D	Water	08/22/16 12:55	08/23/16 17:47
280-87230-5	MW-8EB	Water	08/22/16 13:50	08/23/16 17:47

Client Sample Results

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

TestAmerica Job ID: 280-87230-1

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

Client Sample ID: MW-6
Date Collected: 08/23/16 10:25
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 19:31	1
Arsenic	**0.0020**	**J**	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:31	1
Barium	**0.0094**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:31	1
Beryllium	ND	*	0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:31	1
Calcium	**420**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:31	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:31	1
Cobalt	**0.00030**	**J**	0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:31	1
Chromium	**0.00045**	**J**	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:31	1
Molybdenum	**1.1**		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:31	1
Lead	**0.00020**	**J B**	0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:31	1
Selenium	**0.014**		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:31	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:31	1
Boron	**37**	**B**	10	1.3	mg/L		08/26/16 12:00	09/07/16 13:10	500
Lithium	**0.11**		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:31	1

Client Sample ID: MW-7
Date Collected: 08/23/16 12:15
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 19:35	1
Arsenic	**0.0013**	**J**	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:35	1
Barium	**0.0064**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:35	1
Beryllium	ND	*	0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:35	1
Calcium	**420**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:35	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:35	1
Cobalt	ND		0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:35	1
Chromium	**0.00050**	**J**	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:35	1
Molybdenum	**0.96**		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:35	1
Lead	ND		0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:35	1
Selenium	**0.0084**		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:35	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:35	1
Boron	**45**	**B**	10	1.3	mg/L		08/26/16 12:00	09/07/16 13:14	500
Lithium	**0.25**		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:35	1

Client Sample ID: MW-8
Date Collected: 08/22/16 12:55
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 19:39	1
Arsenic	**0.0033**	**J**	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:39	1
Barium	**0.0064**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:39	1
Beryllium	ND	*	0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:39	1
Calcium	**400**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:39	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:39	1
Cobalt	**0.00022**	**J**	0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:39	1
Chromium	**0.00030**	**J**	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:39	1
Molybdenum	**0.0054**	**J**	0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:39	1
Lead	ND		0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:39	1
Selenium	**0.037**		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:39	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:39	1

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

Client Sample ID: MW-8 — **Lab Sample ID: 280-87230-3**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.71	B	0.40	0.050	mg/L		08/26/16 12:00	09/07/16 13:18	20
Lithium	0.55		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:39	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-87230-4**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 19:44	1
Arsenic	0.0032	J	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:44	1
Barium	0.0059	B	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:44	1
Beryllium	ND	*	0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:44	1
Calcium	390	B	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:44	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:44	1
Cobalt	0.00022	J	0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:44	1
Chromium	0.00067	J	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:44	1
Molybdenum	0.0016	J	0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:44	1
Lead	ND		0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:44	1
Selenium	0.034		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:44	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:44	1
Boron	0.68	B	0.40	0.050	mg/L		08/26/16 12:00	09/07/16 13:22	20
Lithium	0.54		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:44	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-87230-5**
Date Collected: 08/22/16 13:50 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 19:48	1
Arsenic	0.00041	J	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:48	1
Barium	ND		0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:48	1
Beryllium	ND	*	0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:48	1
Calcium	0.21	J B	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:48	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:48	1
Cobalt	ND		0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:48	1
Chromium	0.00027	J	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:48	1
Molybdenum	ND		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:48	1
Lead	ND		0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:48	1
Selenium	ND		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:48	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:48	1
Boron	0.0063	J B ^	0.020	0.0025	mg/L		08/26/16 12:00	09/13/16 13:29	1
Lithium	0.00080	J	0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:48	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-87230-1**
Date Collected: 08/23/16 10:25 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.040	J B	0.20	0.027	ug/L		09/02/16 12:10	09/02/16 17:57	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7 — **Lab Sample ID: 280-87230-2**
Date Collected: 08/23/16 12:15 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.037	J B	0.20	0.027	ug/L		09/02/16 12:10	09/02/16 18:04	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-87230-3**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.045	J B	0.20	0.027	ug/L		09/02/16 12:10	09/02/16 18:10	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-87230-4**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.045	J B	0.20	0.027	ug/L		09/02/16 12:10	09/02/16 18:13	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-87230-5**
Date Collected: 08/22/16 13:50 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.043	J B	0.20	0.027	ug/L		09/02/16 12:10	09/02/16 18:15	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-87230-1**
Date Collected: 08/23/16 10:25 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.4	HF	0.1	0.1	SU			08/26/16 14:12	1
Temperature	22.0	HF	1.0	1.0	Degrees C			08/26/16 14:12	1
Chloride	46	B	6.0	0.51	mg/L			09/07/16 18:35	2
Fluoride	0.30	J	1.0	0.12	mg/L			09/07/16 18:35	2
Sulfate	2900		250	12	mg/L			09/08/16 03:13	50
Total Dissolved Solids (TDS)	4500		40	19	mg/L			08/25/16 08:24	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			08/29/16 16:11	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-87230-2**
Date Collected: 08/23/16 12:15 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.7	HF	0.1	0.1	SU			08/26/16 14:15	1
Temperature	21.7	HF	1.0	1.0	Degrees C			08/26/16 14:15	1
Chloride	110	B	6.0	0.51	mg/L			09/07/16 19:15	2
Fluoride	0.19	J	1.0	0.12	mg/L			09/07/16 19:15	2
Sulfate	2900		250	12	mg/L			09/08/16 03:33	50
Total Dissolved Solids (TDS)	4900		100	47	mg/L			08/30/16 17:36	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			08/29/16 16:11	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-87230-3**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

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			08/26/16 14:20	1

General Chemistry (Continued)

Client Sample ID: MW-8 — **Lab Sample ID: 280-87230-3**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.6	HF	1.0	1.0	Degrees C			08/26/16 14:20	1
Chloride	200	B	6.0	0.51	mg/L			09/07/16 20:34	2
Fluoride	0.17	J	1.0	0.12	mg/L			09/07/16 20:34	2
Sulfate	4400		250	12	mg/L			09/07/16 20:54	50
Total Dissolved Solids (TDS)	7600		40	19	mg/L			08/24/16 14:48	1
Total Suspended Solids	4.8	B	4.0	1.1	mg/L			08/26/16 12:11	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-87230-4**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

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			08/26/16 14:32	1
Temperature	21.7	HF	1.0	1.0	Degrees C			08/26/16 14:32	1
Chloride	200	B	6.0	0.51	mg/L			09/07/16 21:14	2
Fluoride	0.18	J	1.0	0.12	mg/L			09/07/16 21:14	2
Sulfate	4400		250	12	mg/L			09/07/16 21:34	50
Total Dissolved Solids (TDS)	7300		40	19	mg/L			08/24/16 14:48	1
Total Suspended Solids	4.4	B	4.0	1.1	mg/L			08/26/16 12:11	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-87230-5**
Date Collected: 08/22/16 13:50 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.2	HF	0.1	0.1	SU			09/08/16 16:32	1
Temperature	23.2	HF	1.0	1.0	Degrees C			09/08/16 16:32	1
Chloride	0.63	J B	3.0	0.25	mg/L			09/07/16 21:54	1
Fluoride	ND		0.50	0.060	mg/L			09/07/16 21:54	1
Sulfate	ND		5.0	0.23	mg/L			09/07/16 21:54	1
Total Dissolved Solids (TDS)	6.0	J	10	4.7	mg/L			08/24/16 14:48	1
Total Suspended Solids	2.0	J B	4.0	1.1	mg/L			08/26/16 12:11	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-87230-1**
Date Collected: 08/23/16 10:25 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.178		0.0725	0.0742	1.00	0.0869	pCi/L	08/30/16 15:08	09/21/16 07:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.5*		*40 - 110*	*08/30/16 15:08*	*09/21/16 07:22*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-87230-2**
Date Collected: 08/23/16 12:15 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.168		0.0677	0.0694	1.00	0.0783	pCi/L	08/30/16 15:08	09/21/16 07:22	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		40 - 110	08/30/16 15:08	09/21/16 07:22	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-87230-3**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0557	U	0.0648	0.0650	1.00	0.107	pCi/L	08/30/16 15:08	09/21/16 07:22	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		40 - 110	08/30/16 15:08	09/21/16 07:22	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-87230-4**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.144		0.0639	0.0651	1.00	0.0770	pCi/L	08/30/16 15:08	09/21/16 07:22	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	89.7		40 - 110	08/30/16 15:08	09/21/16 07:22	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-87230-5**
Date Collected: 08/22/16 13:50 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0821		0.0548	0.0553	1.00	0.0769	pCi/L	08/30/16 15:08	09/21/16 07:22	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.9		40 - 110	08/30/16 15:08	09/21/16 07:22	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-87230-1**
Date Collected: 08/23/16 10:25 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.403	U	0.268	0.271	1.00	0.413	pCi/L	08/30/16 15:43	09/14/16 16:40	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	89.5		40 - 110	08/30/16 15:43	09/14/16 16:40	1
Y Carrier	81.5		40 - 110	08/30/16 15:43	09/14/16 16:40	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-87230-2**
Date Collected: 08/23/16 12:15 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.556		0.249	0.255	1.00	0.356	pCi/L	08/30/16 15:43	09/14/16 16:40	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		40 - 110	08/30/16 15:43	09/14/16 16:40	1
Y Carrier	86.7		40 - 110	08/30/16 15:43	09/14/16 16:40	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-87230-3**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.387**		0.245	0.248	1.00	0.375	pCi/L	08/30/16 15:43	09/14/16 16:40	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		40 - 110	08/30/16 15:43	09/14/16 16:40	1
Y Carrier	89.0		40 - 110	08/30/16 15:43	09/14/16 16:40	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-87230-4**
Date Collected: 08/22/16 12:55 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0371	U	0.244	0.244	1.00	0.442	pCi/L	08/30/16 15:43	09/14/16 16:40	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	89.7		40 - 110	08/30/16 15:43	09/14/16 16:40	1
Y Carrier	83.7		40 - 110	08/30/16 15:43	09/14/16 16:40	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-87230-5**
Date Collected: 08/22/16 13:50 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.224	U	0.242	0.243	1.00	0.396	pCi/L	08/30/16 15:43	09/14/16 16:40	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.9		40 - 110	08/30/16 15:43	09/14/16 16:40	1
Y Carrier	84.5		40 - 110	08/30/16 15:43	09/14/16 16:40	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-87230-1**
Date Collected: 08/23/16 10:25 — **Matrix: Water**
Date Received: 08/23/16 17:47

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.581**		0.278	0.281	5.00	0.413	pCi/L		09/21/16 18:23	1

Client Sample Results

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

TestAmerica Job ID: 280-87230-1

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

Client Sample ID: MW-7
Date Collected: 08/23/16 12:15
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.724		0.259	0.264	5.00	0.356	pCi/L		09/21/16 18:23	1

Client Sample ID: MW-8
Date Collected: 08/22/16 12:55
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.443		0.254	0.256	5.00	0.375	pCi/L		09/21/16 18:23	1

Client Sample ID: MW-8D
Date Collected: 08/22/16 12:55
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.106	U	0.252	0.253	5.00	0.442	pCi/L		09/21/16 18:23	1

Client Sample ID: MW-8EB
Date Collected: 08/22/16 13:50
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.306	U	0.248	0.249	5.00	0.396	pCi/L		09/21/16 18:23	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-244446/1-A
Matrix: Water
Analysis Batch: 245137

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 244446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 18:38	1
Arsenic	ND		0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 18:38	1
Barium	0.00104	J	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 18:38	1
Beryllium	ND		0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 18:38	1
Calcium	0.251	J	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 18:38	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 18:38	1
Cobalt	ND		0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 18:38	1
Chromium	ND		0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 18:38	1
Molybdenum	ND		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 18:38	1
Lead	0.000194	J	0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 18:38	1
Selenium	ND		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 18:38	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 18:38	1
Lithium	ND		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 18:38	1

Lab Sample ID: MB 240-244446/1-A
Matrix: Water
Analysis Batch: 245809

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 244446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.00834	J	0.020	0.0025	mg/L		08/26/16 12:00	09/07/16 11:10	1

Lab Sample ID: LCS 240-244446/2-A
Matrix: Water
Analysis Batch: 245137

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 244446

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	0.999		mg/L		100	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Beryllium	1.00	1.24	*	mg/L		124	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	1.06		mg/L		106	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.0978		mg/L		98	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.251		mg/L		100	80 - 120
Lithium	0.100	0.0883		mg/L		88	80 - 120

Lab Sample ID: LCS 240-244446/2-A
Matrix: Water
Analysis Batch: 245809

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 244446

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

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-340473/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340845 — **Prep Batch: 340473**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0433	J	0.20	0.027	ug/L		09/02/16 12:10	09/02/16 17:53	1

Lab Sample ID: LCS 280-340473/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340845 — **Prep Batch: 340473**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.19		ug/L		104	84 - 120

Lab Sample ID: 280-87230-1 MS — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340845 — **Prep Batch: 340473**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.040	J B	5.00	5.03		ug/L		100	75 - 125

Lab Sample ID: 280-87230-1 MSD — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340845 — **Prep Batch: 340473**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.040	J B	5.00	4.77		ug/L		95	75 - 125	5	20

Method: 9040B - pH

Lab Sample ID: LCS 280-339765/27 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339765

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 280-339765/50 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339765

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: 280-87230-C-5 DU — **Client Sample ID: 280-87230-C-5 DU**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339765

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	6.7	HF	6.3	F3	SU		7	5
Temperature	22.0	HF	22.1		Degrees C		0.6	10

Method: 9040B - pH (Continued)

Lab Sample ID: LCS 280-341467/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 341467

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 280-341054/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 341054

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.573	J	3.0	0.25	mg/L			09/07/16 10:56	1
Fluoride	ND		0.50	0.060	mg/L			09/07/16 10:56	1
Sulfate	ND		5.0	0.23	mg/L			09/07/16 10:56	1

Lab Sample ID: LCS 280-341054/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 341054

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.0		mg/L		98	90 - 110
Fluoride	5.00	4.70		mg/L		94	90 - 110
Sulfate	100	97.3		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-341054/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 341054

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
Fluoride	5.00	4.71		mg/L		94	90 - 110	0	10
Sulfate	100	97.5		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-341054/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 341054

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.35	J	mg/L		94	50 - 150
Fluoride	0.200	0.197	J	mg/L		98	50 - 150
Sulfate	2.50	2.41	J	mg/L		97	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-339379/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/24/16 14:48	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-339379/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339379

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			501	484		mg/L		97	86 - 110		

Lab Sample ID: 280-87230-C-5 DU — **Client Sample ID: MW-8EB**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339379

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	6.0	J		ND		mg/L				NC	10

Lab Sample ID: MB 280-339511/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339511

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/25/16 08:24	1

Lab Sample ID: LCS 280-339511/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339511

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			501	479		mg/L		96	86 - 110		

Lab Sample ID: LCSD 280-339511/3 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339511

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)			501	490		mg/L		98	86 - 110	2	20

Lab Sample ID: MB 280-340188/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340188

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/30/16 17:36	1

Lab Sample ID: LCS 280-340188/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340188

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			501	472		mg/L		94	86 - 110		

QC Sample Results

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

TestAmerica Job ID: 280-87230-1

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

Lab Sample ID: MB 280-339730/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	1.60	J	4.0	1.1	mg/L			08/26/16 12:11	1

Lab Sample ID: LCS 280-339730/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	94.0		mg/L		94	86 - 114

Lab Sample ID: MB 280-339999/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339999

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/29/16 16:11	1

Lab Sample ID: LCS 280-339999/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339999

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.0		mg/L		92	86 - 114

Lab Sample ID: 280-87230-2 DU — **Client Sample ID: MW-7**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 339999

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	2.8	J	2.40	J F5	mg/L		15	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-267377/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 270875 — **Prep Batch: 267377**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.05559	U	0.0611	0.0613	1.00	0.0994	pCi/L	08/30/16 15:08	09/21/16 07:21	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.8*		*40 - 110*	*08/30/16 15:08*	*09/21/16 07:21*	*1*

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

Lab Sample ID: LCS 160-267377/2-A
Matrix: Water
Analysis Batch: 270875

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 267377

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	15.16		1.47	1.00	0.0821	pCi/L	136	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*84.9*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-267380/1-A
Matrix: Water
Analysis Batch: 269644

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 267380

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1234	U	0.236	0.236	1.00	0.404	pCi/L	08/30/16 15:43	09/14/16 16:40	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.8*		*40 - 110*	*08/30/16 15:43*	*09/14/16 16:40*	*1*
Y Carrier	*84.5*		*40 - 110*	*08/30/16 15:43*	*09/14/16 16:40*	*1*

Lab Sample ID: LCS 160-267380/2-A
Matrix: Water
Analysis Batch: 269644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 267380

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			14.6	17.82		1.91	1.00	0.402	pCi/L	122	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*84.9*		*40 - 110*
Y Carrier	*82.2*		*40 - 110*

QC Association Summary

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

TestAmerica Job ID: 280-87230-1

Metals

Prep Batch: 244446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total Recoverable	Water	3005A	
280-87230-2	MW-7	Total Recoverable	Water	3005A	
280-87230-3	MW-8	Total Recoverable	Water	3005A	
280-87230-4	MW-8D	Total Recoverable	Water	3005A	
280-87230-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-244446/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-244446/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 245137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total Recoverable	Water	6020A	244446
280-87230-2	MW-7	Total Recoverable	Water	6020A	244446
280-87230-3	MW-8	Total Recoverable	Water	6020A	244446
280-87230-4	MW-8D	Total Recoverable	Water	6020A	244446
280-87230-5	MW-8EB	Total Recoverable	Water	6020A	244446
MB 240-244446/1-A	Method Blank	Total Recoverable	Water	6020A	244446
LCS 240-244446/2-A	Lab Control Sample	Total Recoverable	Water	6020A	244446

Analysis Batch: 245809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-244446/1-A	Method Blank	Total Recoverable	Water	6020A	244446
LCS 240-244446/2-A	Lab Control Sample	Total Recoverable	Water	6020A	244446

Analysis Batch: 245905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total Recoverable	Water	6020A	244446
280-87230-2	MW-7	Total Recoverable	Water	6020A	244446
280-87230-3	MW-8	Total Recoverable	Water	6020A	244446
280-87230-4	MW-8D	Total Recoverable	Water	6020A	244446

Analysis Batch: 246594

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-5	MW-8EB	Total Recoverable	Water	6020A	244446

Prep Batch: 340473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	7470A	
280-87230-2	MW-7	Total/NA	Water	7470A	
280-87230-3	MW-8	Total/NA	Water	7470A	
280-87230-4	MW-8D	Total/NA	Water	7470A	
280-87230-5	MW-8EB	Total/NA	Water	7470A	
MB 280-340473/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-340473/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-87230-1 MS	MW-6	Total/NA	Water	7470A	
280-87230-1 MSD	MW-6	Total/NA	Water	7470A	

Analysis Batch: 340845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	7470A	340473
280-87230-2	MW-7	Total/NA	Water	7470A	340473
280-87230-3	MW-8	Total/NA	Water	7470A	340473

Metals (Continued)

Analysis Batch: 340845 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-4	MW-8D	Total/NA	Water	7470A	340473
280-87230-5	MW-8EB	Total/NA	Water	7470A	340473
MB 280-340473/1-A	Method Blank	Total/NA	Water	7470A	340473
LCS 280-340473/2-A	Lab Control Sample	Total/NA	Water	7470A	340473
280-87230-1 MS	MW-6	Total/NA	Water	7470A	340473
280-87230-1 MSD	MW-6	Total/NA	Water	7470A	340473

General Chemistry

Analysis Batch: 339379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-3	MW-8	Total/NA	Water	SM 2540C	
280-87230-4	MW-8D	Total/NA	Water	SM 2540C	
280-87230-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-339379/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-339379/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-87230-C-5 DU	MW-8EB	Total/NA	Water	SM 2540C	

Analysis Batch: 339511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	SM 2540C	
MB 280-339511/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-339511/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-339511/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 339730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-3	MW-8	Total/NA	Water	SM 2540D	
280-87230-4	MW-8D	Total/NA	Water	SM 2540D	
280-87230-5	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-339730/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-339730/1	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 339765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	9040B	
280-87230-2	MW-7	Total/NA	Water	9040B	
280-87230-3	MW-8	Total/NA	Water	9040B	
280-87230-4	MW-8D	Total/NA	Water	9040B	
LCS 280-339765/27	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-339765/50	Lab Control Sample	Total/NA	Water	9040B	
280-87230-C-5 DU	280-87230-C-5 DU	Total/NA	Water	9040B	

Analysis Batch: 339999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	SM 2540D	
280-87230-2	MW-7	Total/NA	Water	SM 2540D	
MB 280-339999/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-339999/1	Lab Control Sample	Total/NA	Water	SM 2540D	
280-87230-2 DU	MW-7	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 340188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-2	MW-7	Total/NA	Water	SM 2540C	
MB 280-340188/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-340188/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 341054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	9056A	
280-87230-1	MW-6	Total/NA	Water	9056A	
280-87230-2	MW-7	Total/NA	Water	9056A	
280-87230-2	MW-7	Total/NA	Water	9056A	
280-87230-3	MW-8	Total/NA	Water	9056A	
280-87230-3	MW-8	Total/NA	Water	9056A	
280-87230-4	MW-8D	Total/NA	Water	9056A	
280-87230-4	MW-8D	Total/NA	Water	9056A	
280-87230-5	MW-8EB	Total/NA	Water	9056A	
MB 280-341054/6	Method Blank	Total/NA	Water	9056A	
LCS 280-341054/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-341054/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-341054/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 341467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-341467/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 267377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	PrecSep-21	
280-87230-2	MW-7	Total/NA	Water	PrecSep-21	
280-87230-3	MW-8	Total/NA	Water	PrecSep-21	
280-87230-4	MW-8D	Total/NA	Water	PrecSep-21	
280-87230-5	MW-8EB	Total/NA	Water	PrecSep-21	
MB 160-267377/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-267377/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 267380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87230-1	MW-6	Total/NA	Water	PrecSep_0	
280-87230-2	MW-7	Total/NA	Water	PrecSep_0	
280-87230-3	MW-8	Total/NA	Water	PrecSep_0	
280-87230-4	MW-8D	Total/NA	Water	PrecSep_0	
280-87230-5	MW-8EB	Total/NA	Water	PrecSep_0	
MB 160-267380/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-267380/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-87230-1

Client Sample ID: MW-6

Lab Sample ID: 280-87230-1
Date Collected: 08/23/16 10:25
Matrix: Water
Date Received: 08/23/16 17:47

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:31	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		500			245905	09/07/16 13:10	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	340473	09/02/16 12:10	CDH	TAL DEN
Total/NA	Analysis	7470A		1			340845	09/02/16 17:57	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339765	08/26/16 14:12	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	341054	09/07/16 18:35	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	341054	09/08/16 03:13	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	339511	08/25/16 08:24	KMS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	339999	08/29/16 16:11	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	267377	08/30/16 15:08	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 07:22	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	267380	08/30/16 15:43	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271037	09/21/16 18:23	RTM	TAL SL

Client Sample ID: MW-7

Lab Sample ID: 280-87230-2
Date Collected: 08/23/16 12:15
Matrix: Water
Date Received: 08/23/16 17:47

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:35	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		500			245905	09/07/16 13:14	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	340473	09/02/16 12:10	CDH	TAL DEN
Total/NA	Analysis	7470A		1			340845	09/02/16 18:04	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339765	08/26/16 14:15	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	341054	09/07/16 19:15	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	341054	09/08/16 03:33	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	340188	08/30/16 17:36	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	339999	08/29/16 16:11	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.51 mL	1.0 g	267377	08/30/16 15:08	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 07:22	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.51 mL	1.0 g	267380	08/30/16 15:43	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271037	09/21/16 18:23	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-87230-1

Client Sample ID: MW-8

Lab Sample ID: 280-87230-3
Date Collected: 08/22/16 12:55
Matrix: Water
Date Received: 08/23/16 17:47

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:39	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		20			245905	09/07/16 13:18	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	340473	09/02/16 12:10	CDH	TAL DEN
Total/NA	Analysis	7470A		1			340845	09/02/16 18:10	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339765	08/26/16 14:20	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	341054	09/07/16 20:34	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	341054	09/07/16 20:54	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	339379	08/24/16 14:48	KMS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	339730	08/26/16 12:11	CML	TAL DEN
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	267377	08/30/16 15:08	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 07:22	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	267380	08/30/16 15:43	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271037	09/21/16 18:23	RTM	TAL SL

Client Sample ID: MW-8D

Lab Sample ID: 280-87230-4
Date Collected: 08/22/16 12:55
Matrix: Water
Date Received: 08/23/16 17:47

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:44	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		20			245905	09/07/16 13:22	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	340473	09/02/16 12:10	CDH	TAL DEN
Total/NA	Analysis	7470A		1			340845	09/02/16 18:13	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339765	08/26/16 14:32	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	341054	09/07/16 21:14	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	341054	09/07/16 21:34	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	339379	08/24/16 14:48	KMS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	339730	08/26/16 12:11	CML	TAL DEN
Total/NA	Prep	PrecSep-21			999.52 mL	1.0 g	267377	08/30/16 15:08	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 07:22	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.52 mL	1.0 g	267380	08/30/16 15:43	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271037	09/21/16 18:23	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-87230-1

Client Sample ID: MW-8EB

Date Collected: 08/22/16 13:50
Date Received: 08/23/16 17:47

Lab Sample ID: 280-87230-5

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:48	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			246594	09/13/16 13:29	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	340473	09/02/16 12:10	CDH	TAL DEN
Total/NA	Analysis	7470A		1			340845	09/02/16 18:15	CDH	TAL DEN
Total/NA	Analysis	9040B		1			341467	09/08/16 16:32	JAP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	341054	09/07/16 21:54	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	339379	08/24/16 14:48	KMS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	339730	08/26/16 12:11	CML	TAL DEN
Total/NA	Prep	PrecSep-21			999.72 mL	1.0 g	267377	08/30/16 15:08	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 07:22	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.72 mL	1.0 g	267380	08/30/16 15:43	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271037	09/21/16 18:23	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

Certification Summary

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

TestAmerica Job ID: 280-87230-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

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

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-16 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17
USDA	Federal		P330-13-00319	11-26-16 *
Virginia	NELAP	3	460175	09-14-16 *
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	003757	11-30-16 *
Iowa	State Program	7	373	12-01-16 *
Kansas	NELAP	7	E-10236	10-31-16 *
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17

* Certification renewal pending - certification considered valid.

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542016-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16 *
Texas	NELAP	6	T104704193-15-9	07-31-17
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-16 *

* Certification renewal pending - 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: Kupper, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: 720 933 7496	E-Mail: stephanie.kupper@testamericainc.com		Page: Page ___ of ___
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 - Hayden	Project #: 28014377			
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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~ TK				~~Water~~		N							
MW-6	8-23-16	1025	C	Water	N	N	✓	✓	✓	✓	✓		
MW-7	8-23-16	1215	C	Water	N	N	✓	✓	✓	✓	✓		
MW-8	8-22-16	1255	C	Water	N	N	✓	✓	✓	✓	✓		
~~Field Duplicate~~ TK MW-8D	8-22-16	1255	C	Water	N	N	✓	✓	✓	✓	✓		
~~Equipment Blank~~ TK MW-8EB	8-22-16	1350	C	Water	N	N	✓	✓	✓	✓	✓		

280-87230 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
Tara Kent	8-23-16 1747	HDR	[signature]	8/23/16 1747	TAD

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.4, 3.3, 3.1 + 0.0 IR#5 Transfered by DW 8/23/16

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

Chain of Custody Record

280-87230 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North, ,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Xcel Energy CCR - Hayden Station

Sampler:
Phone:
Due Date Requested: 9/19/2016
TAT Requested (days):
PO #:
WO #:
Project #: 28014377
SSOW#:

Lab PM: Rothmeyer, Stephanie
E-Mail: stephanie.rothmeyer@testamericainc.com

COC No: 30-365153.1
Page: Page 1 of 1
Job #: 280-87230-1

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)	Ra226Ra228_GFPC/ Combined Radium-226 and Radium-228	9315_Ra226/PrecSep_21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-87230-1)	8/23/16	10:25 Mountain		Water			X	X	X	2	
MW-7 (280-87230-2)	8/23/16	12:15 Mountain		Water			X	X	X	2	
MW-8 (280-87230-3)	8/22/16	12:55 Mountain		Water			X	X	X	2	
MW-8D (280-87230-4)	8/22/16	12:55 Mountain		Water			X	X	X	2	
MW-8EB (280-87230-5)	8/22/16	13:50 Mountain		Water			X	X	X	2	

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
[illegible]	[illegible]/16 1445		[illegible]	8/25/16 0920	
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

3.0/4.0

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: 280-365150.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-87230-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 9/15/2016			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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:

557

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 12 Total Metals (w/collision cell) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-6 (280-87230-1)	8/23/16	10:25 Mountain		Water			X	1	Use Collision Cell
MW-7 (280-87230-2)	8/23/16	12:15 Mountain		Water			X	1	Use Collision Cell
MW-8 (280-87230-3)	8/22/16	12:55 Mountain		Water			X	1	Use Collision Cell
MW-8D (280-87230-4)	8/22/16	12:55 Mountain		Water			X	1	Use Collision Cell
MW-8EB (280-87230-5)	8/22/16	13:50 Mountain		Water			X	1	Use Collision Cell

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
	8/24/16 1445			8-25-16 910	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:

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

Client Denver Site Name _____ Cooler unpacked by:

Cooler Received on 8-25-16 Opened on 8-25-16

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # _____ 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 +1.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF +1.0°C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 4.0 °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC574756**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. 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)

16. SAMPLE PRESERVATION

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

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

Ref: SOP NC-SC-0005, Sample Receiving
L:\QAQC\QA Department\QA TARDIS\Document Control\Work Instructions\In Revision\WI-NC-099-061316 Cooler Receipt Form.doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-87230-1

Login Number: 87230
List Number: 1
Creator: White, Denise 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").	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: 280-87230-1

Login Number: 87230
List Number: 3
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 08/25/16 02:32 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	3.3,2.8
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").	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 - Hayden

TestAmerica Job ID: 280-87230-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)								
Lab Sample ID	Client Sample ID	Ba (40-110)								
280-87230-1	MW-6	89.5								
280-87230-2	MW-7	94.6								
280-87230-3	MW-8	90.3								
280-87230-4	MW-8D	89.7								
280-87230-5	MW-8EB	90.9								
LCS 160-267377/2-A	Lab Control Sample	84.9								
MB 160-267377/1-A	Method Blank	83.8								

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)								
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)							
280-87230-1	MW-6	89.5	81.5							
280-87230-2	MW-7	94.6	86.7							
280-87230-3	MW-8	90.3	89.0							
280-87230-4	MW-8D	89.7	83.7							
280-87230-5	MW-8EB	90.9	84.5							
LCS 160-267380/2-A	Lab Control Sample	84.9	82.2							
MB 160-267380/1-A	Method Blank	83.8	84.5							

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-91080-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
12/30/2016 9:22:09 AM

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

LINKS

Review your project results through TotalAccess

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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 - Hayden

TestAmerica Job ID: 280-91080-1

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
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
H	Sample was prepped or analyzed beyond the specified holding time
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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 280-91080-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-91080-1

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 11/16/2016 at 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.1º C and 1.1º C.

TOTAL RECOVERABLE METALS
Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/19/2016 and analyzed on 11/29/2016 and 11/30/2016.

Samples MW-6 (280-91080-1)[5X] and MW-7 (280-91080-2)[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 RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/19/2016 and analyzed on 11/24/2016 and 12/09/2016.

Barium, Calcium and Lead were detected in method blank MB 240-256407/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 12/05/2016.

Mercury was detected in method blank MB 280-354223/1-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.

Job ID: 280-91080-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL DISSOLVED SOLIDS
Samples MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/21/2016 and 11/29/2016.

Total Dissolved Solids (TDS) exceeded the RPD limit for the duplicate of sample 280-90968-5. Sample non-homogeneity is suspected.

Reanalysis of the following samples was performed outside of the analytical holding time due to the original results being over residue: MW-6 (280-91080-1), MW-7 (280-91080-2). Reanalysis was performed with the new results within residue limits.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/21/2016.

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

CORROSIVITY (PH)
Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 11/30/2016, 12/01/2016 and 12/05/2016.

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

ANIONS (28 DAYS)
Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/10/2016 and 12/12/2016.

Samples MW-6 (280-91080-1)[20X], MW-7 (280-91080-2)[20X], MW-8 (280-91080-3)[2X], MW-8 (280-91080-3)[50X], MW-8D (280-91080-4)[2X] and MW-8D (280-91080-4)[50X] 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)
Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 11/25/2016 and analyzed on 12/29/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4), MW-8EB (280-91080-5). 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-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 11/25/2016 and analyzed on 12/28/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4), MW-8EB (280-91080-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Job ID: 280-91080-1 (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-226/RADIUM-228 (GFPC)

Samples MW-6 (280-91080-1), MW-7 (280-91080-2), MW-8 (280-91080-3), MW-8D (280-91080-4) and MW-8EB (280-91080-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 12/29/2016.

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 - Hayden

TestAmerica Job ID: 280-91080-1

Client Sample ID: MW-6 — Lab Sample ID: 280-91080-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	43000		1000	41	ug/L	5		6010C	Total Recoverable
Arsenic	0.0025	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0074	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	430	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00017	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Molybdenum	1.3		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.016		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.052	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	8.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	64		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.35	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)	4700	H	100	47	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-7 — Lab Sample ID: 280-91080-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	49000		1000	41	ug/L	5		6010C	Total Recoverable
Antimony	0.00029	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0018	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0062	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	460	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Molybdenum	0.87		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.010		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.29		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.053	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	8.8	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	120		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.22	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3100		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4900	H	100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	5.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-91080-3

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-91080-1

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 280-91080-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1100		200	8.1	ug/L	1		6010C	Total Recoverable
Arsenic	0.0046	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0085	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	390	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00035	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.00072	J B	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0015	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00041	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Selenium	0.041		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.61		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.055	J B	0.20	0.027	ug/L	1		7470A	Total/NA
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	210		6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	4600		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7100		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	17		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8D — Lab Sample ID: 280-91080-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1100		200	8.1	ug/L	1		6010C	Total Recoverable
Arsenic	0.0048	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0076	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	420	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00029	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.00054	J B	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0012	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00025	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Selenium	0.043		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.63		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.053	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		6.0	0.51	mg/L	2		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-91080-1

Client Sample ID: MW-8D (Continued) — Lab Sample ID: 280-91080-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	4500		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7200		40	19	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-8EB — Lab Sample ID: 280-91080-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	57	J	200	8.1	ug/L	1		6010C	Total Recoverable
Calcium	0.18	J B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Lithium	0.00062	J	0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Mercury	0.050	J B	0.20	0.027	ug/L	1		7470A	Total/NA
pH adj. to 25 deg C	6.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	0.89	J	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	74		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 - Hayden

TestAmerica Job ID: 280-91080-1

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

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 - Hayden

TestAmerica Job ID: 280-91080-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-91080-1	MW-6	Water	11/15/16 10:30	11/16/16 10:00
280-91080-2	MW-7	Water	11/15/16 12:25	11/16/16 10:00
280-91080-3	MW-8	Water	11/14/16 13:20	11/16/16 10:00
280-91080-4	MW-8D	Water	11/14/16 13:20	11/16/16 10:00
280-91080-5	MW-8EB	Water	11/14/16 13:50	11/16/16 10:00

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-91080-1**
Date Collected: 11/15/16 10:30 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	43000		1000	41	ug/L		11/19/16 15:00	11/30/16 13:25	5

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	49000		1000	41	ug/L		11/19/16 15:00	11/30/16 13:30	5

Client Sample ID: MW-8 — **Lab Sample ID: 280-91080-3**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1100		200	8.1	ug/L		11/19/16 15:00	11/29/16 16:07	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-91080-4**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1100		200	8.1	ug/L		11/19/16 15:00	11/29/16 16:38	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-91080-5**
Date Collected: 11/14/16 13:50 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	57	J	200	8.1	ug/L		11/19/16 15:00	11/29/16 16:11	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-91080-1**
Date Collected: 11/15/16 10:30 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/19/16 15:00	12/09/16 16:47	1
Arsenic	0.0025	J	0.0050	0.00035	mg/L		11/19/16 15:00	12/09/16 16:47	1
Barium	0.0074	B	0.0050	0.00052	mg/L		11/19/16 15:00	12/09/16 16:47	1
Beryllium	ND		0.0010	0.00040	mg/L		11/19/16 15:00	12/09/16 16:47	1
Calcium	430	B	1.0	0.043	mg/L		11/19/16 15:00	12/09/16 16:47	1
Cadmium	ND		0.0010	0.00031	mg/L		11/19/16 15:00	12/09/16 16:47	1
Cobalt	0.00017	J	0.0010	0.00013	mg/L		11/19/16 15:00	12/09/16 16:47	1
Chromium	ND		0.0020	0.00026	mg/L		11/19/16 15:00	12/09/16 16:47	1
Molybdenum	1.3		0.010	0.00051	mg/L		11/19/16 15:00	12/09/16 16:47	1
Lead	ND		0.0010	0.00016	mg/L		11/19/16 15:00	11/24/16 00:14	1
Selenium	0.016		0.0050	0.00048	mg/L		11/19/16 15:00	12/09/16 16:47	1
Thallium	ND		0.0010	0.00028	mg/L		11/19/16 15:00	11/24/16 00:14	1
Lithium	0.12		0.0080	0.00016	mg/L		11/19/16 15:00	12/09/16 16:47	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00029	J	0.0020	0.00027	mg/L		11/19/16 15:00	12/09/16 16:51	1

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

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0018	J	0.0050	0.00035	mg/L		11/19/16 15:00	12/09/16 16:51	1
Barium	0.0062	B	0.0050	0.00052	mg/L		11/19/16 15:00	12/09/16 16:51	1
Beryllium	ND		0.0010	0.00040	mg/L		11/19/16 15:00	12/09/16 16:51	1
Calcium	460	B	1.0	0.043	mg/L		11/19/16 15:00	12/09/16 16:51	1
Cadmium	ND		0.0010	0.00031	mg/L		11/19/16 15:00	12/09/16 16:51	1
Cobalt	ND		0.0010	0.00013	mg/L		11/19/16 15:00	12/09/16 16:51	1
Chromium	ND		0.0020	0.00026	mg/L		11/19/16 15:00	12/09/16 16:51	1
Molybdenum	0.87		0.010	0.00051	mg/L		11/19/16 15:00	12/09/16 16:51	1
Lead	ND		0.0010	0.00016	mg/L		11/19/16 15:00	11/24/16 00:18	1
Selenium	0.010		0.0050	0.00048	mg/L		11/19/16 15:00	12/09/16 16:51	1
Thallium	ND		0.0010	0.00028	mg/L		11/19/16 15:00	11/24/16 00:18	1
Lithium	0.29		0.0080	0.00016	mg/L		11/19/16 15:00	12/09/16 16:51	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-91080-3**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/19/16 15:00	12/09/16 17:04	1
Arsenic	0.0046	J	0.0050	0.00035	mg/L		11/19/16 15:00	12/09/16 17:04	1
Barium	0.0085	B	0.0050	0.00052	mg/L		11/19/16 15:00	12/09/16 17:04	1
Beryllium	ND		0.0010	0.00040	mg/L		11/19/16 15:00	12/09/16 17:04	1
Calcium	390	B	1.0	0.043	mg/L		11/19/16 15:00	12/09/16 17:04	1
Cadmium	ND		0.0010	0.00031	mg/L		11/19/16 15:00	12/09/16 17:04	1
Cobalt	0.00035	J	0.0010	0.00013	mg/L		11/19/16 15:00	12/09/16 17:04	1
Chromium	0.00072	J B	0.0020	0.00026	mg/L		11/19/16 15:00	12/09/16 17:04	1
Molybdenum	0.0015	J	0.010	0.00051	mg/L		11/19/16 15:00	12/09/16 17:04	1
Lead	0.00041	J B	0.0010	0.00016	mg/L		11/19/16 15:00	11/24/16 00:22	1
Selenium	0.041		0.0050	0.00048	mg/L		11/19/16 15:00	12/09/16 17:04	1
Thallium	ND		0.0010	0.00028	mg/L		11/19/16 15:00	11/24/16 00:22	1
Lithium	0.61		0.0080	0.00016	mg/L		11/19/16 15:00	12/09/16 17:04	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-91080-4**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/19/16 15:00	12/09/16 17:08	1
Arsenic	0.0048	J	0.0050	0.00035	mg/L		11/19/16 15:00	12/09/16 17:08	1
Barium	0.0076	B	0.0050	0.00052	mg/L		11/19/16 15:00	12/09/16 17:08	1
Beryllium	ND		0.0010	0.00040	mg/L		11/19/16 15:00	12/09/16 17:08	1
Calcium	420	B	1.0	0.043	mg/L		11/19/16 15:00	12/09/16 17:08	1
Cadmium	ND		0.0010	0.00031	mg/L		11/19/16 15:00	12/09/16 17:08	1
Cobalt	0.00029	J	0.0010	0.00013	mg/L		11/19/16 15:00	12/09/16 17:08	1
Chromium	0.00054	J B	0.0020	0.00026	mg/L		11/19/16 15:00	12/09/16 17:08	1
Molybdenum	0.0012	J	0.010	0.00051	mg/L		11/19/16 15:00	12/09/16 17:08	1
Lead	0.00025	J B	0.0010	0.00016	mg/L		11/19/16 15:00	11/24/16 00:26	1
Selenium	0.043		0.0050	0.00048	mg/L		11/19/16 15:00	12/09/16 17:08	1
Thallium	ND		0.0010	0.00028	mg/L		11/19/16 15:00	11/24/16 00:26	1
Lithium	0.63		0.0080	0.00016	mg/L		11/19/16 15:00	12/09/16 17:08	1

Client Sample Results

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

TestAmerica Job ID: 280-91080-1

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

Client Sample ID: MW-8EB — **Lab Sample ID: 280-91080-5**
Date Collected: 11/14/16 13:50 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/19/16 15:00	12/09/16 17:12	1
Arsenic	ND		0.0050	0.00035	mg/L		11/19/16 15:00	12/09/16 17:12	1
Barium	ND		0.0050	0.00052	mg/L		11/19/16 15:00	12/09/16 17:12	1
Beryllium	ND		0.0010	0.00040	mg/L		11/19/16 15:00	12/09/16 17:12	1
Calcium	**0.18**	**J B**	1.0	0.043	mg/L		11/19/16 15:00	12/09/16 17:12	1
Cadmium	ND		0.0010	0.00031	mg/L		11/19/16 15:00	12/09/16 17:12	1
Cobalt	ND		0.0010	0.00013	mg/L		11/19/16 15:00	12/09/16 17:12	1
Chromium	ND		0.0020	0.00026	mg/L		11/19/16 15:00	12/09/16 17:12	1
Molybdenum	ND		0.010	0.00051	mg/L		11/19/16 15:00	12/09/16 17:12	1
Lead	ND		0.0010	0.00016	mg/L		11/19/16 15:00	11/24/16 00:39	1
Selenium	ND		0.0050	0.00048	mg/L		11/19/16 15:00	12/09/16 17:12	1
Thallium	ND		0.0010	0.00028	mg/L		11/19/16 15:00	11/24/16 00:39	1
Lithium	**0.00062**	**J**	0.0080	0.00016	mg/L		11/19/16 15:00	12/09/16 17:12	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-91080-1**
Date Collected: 11/15/16 10:30 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.052**	**J B**	0.20	0.027	ug/L		12/05/16 11:48	12/05/16 22:12	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.053**	**J B**	0.20	0.027	ug/L		12/05/16 11:48	12/05/16 22:14	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-91080-3**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.055**	**J B**	0.20	0.027	ug/L		12/05/16 11:48	12/05/16 22:16	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-91080-4**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.053**	**J B**	0.20	0.027	ug/L		12/05/16 11:48	12/05/16 22:18	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-91080-5**
Date Collected: 11/14/16 13:50 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.050**	**J B**	0.20	0.027	ug/L		12/05/16 11:48	12/05/16 22:21	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-91080-1**
Date Collected: 11/15/16 10:30 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.4	HF	0.1	0.1	SU			11/30/16 14:01	1
Temperature	21.2	HF	1.0	1.0	Degrees C			11/30/16 14:01	1
Chloride	64		3.0	0.25	mg/L			12/10/16 14:10	1
Fluoride	0.35	J	0.50	0.060	mg/L			12/10/16 14:10	1
Sulfate	3000		100	4.6	mg/L			12/10/16 14:27	20
Total Dissolved Solids (TDS)	4700	H	100	47	mg/L			11/29/16 08:42	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			11/21/16 14:39	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			11/30/16 14:05	1
Temperature	21.1	HF	1.0	1.0	Degrees C			11/30/16 14:05	1
Chloride	120		3.0	0.25	mg/L			12/10/16 15:38	1
Fluoride	0.22	J	0.50	0.060	mg/L			12/10/16 15:38	1
Sulfate	3100		100	4.6	mg/L			12/10/16 14:45	20
Total Dissolved Solids (TDS)	4900	H	100	47	mg/L			11/29/16 08:42	1
Total Suspended Solids	5.2		4.0	1.1	mg/L			11/21/16 14:39	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-91080-3**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

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			12/01/16 13:58	1
Temperature	22.0	HF	1.0	1.0	Degrees C			12/01/16 13:58	1
Chloride	210		6.0	0.51	mg/L			12/10/16 15:56	2
Fluoride	ND		1.0	0.12	mg/L			12/10/16 15:56	2
Sulfate	4600		250	12	mg/L			12/10/16 21:32	50
Total Dissolved Solids (TDS)	7100		40	19	mg/L			11/21/16 10:12	1
Total Suspended Solids	17		4.0	1.1	mg/L			11/21/16 14:39	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-91080-4**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

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			12/01/16 14:03	1
Temperature	22.3	HF	1.0	1.0	Degrees C			12/01/16 14:03	1
Chloride	200		6.0	0.51	mg/L			12/10/16 16:31	2
Fluoride	ND		1.0	0.12	mg/L			12/10/16 16:31	2
Sulfate	4500		250	12	mg/L			12/12/16 11:27	50
Total Dissolved Solids (TDS)	7200		40	19	mg/L			11/21/16 10:12	1
Total Suspended Solids	11		4.0	1.1	mg/L			11/21/16 14:39	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-91080-5**
Date Collected: 11/14/16 13:50 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.4	HF	0.1	0.1	SU			12/05/16 16:55	1
Temperature	22.3	HF	1.0	1.0	Degrees C			12/05/16 16:55	1

General Chemistry (Continued)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-91080-5**
Date Collected: 11/14/16 13:50 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/12/16 11:45	1
Fluoride	ND		0.50	0.060	mg/L			12/12/16 11:45	1
Sulfate	**0.89**	**J**	5.0	0.23	mg/L			12/12/16 11:45	1
Total Dissolved Solids (TDS)	**74**		10	4.7	mg/L			11/21/16 10:12	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/21/16 14:39	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-91080-1**
Date Collected: 11/15/16 10:30 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.626**		0.295	0.301	1.00	0.349	pCi/L	11/25/16 15:16	12/29/16 06:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*11/25/16 15:16*	*12/29/16 06:47*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.110	U	0.187	0.188	1.00	0.329	pCi/L	11/25/16 15:16	12/29/16 06:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.3*		*40 - 110*	*11/25/16 15:16*	*12/29/16 06:47*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-91080-3**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.132	U	0.214	0.214	1.00	0.372	pCi/L	11/25/16 15:16	12/29/16 06:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.9*		*40 - 110*	*11/25/16 15:16*	*12/29/16 06:47*	*1*

Client Sample ID: MW-8D — **Lab Sample ID: 280-91080-4**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.254	U	0.226	0.227	1.00	0.342	pCi/L	11/25/16 15:16	12/29/16 06:48	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.2*		*40 - 110*	*11/25/16 15:16*	*12/29/16 06:48*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8EB
Date Collected: 11/14/16 13:50
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0802	U	0.214	0.215	1.00	0.401	pCi/L	11/25/16 15:16	12/29/16 06:48	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.2*		*40 - 110*	*11/25/16 15:16*	*12/29/16 06:48*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6
Date Collected: 11/15/16 10:30
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.284	U	0.273	0.274	1.00	0.442	pCi/L	11/25/16 15:41	12/28/16 14:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*
Y Carrier	*90.5*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*

Client Sample ID: MW-7
Date Collected: 11/15/16 12:25
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.253	U	0.269	0.270	1.00	0.440	pCi/L	11/25/16 15:41	12/28/16 14:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.3*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*
Y Carrier	*86.7*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*

Client Sample ID: MW-8
Date Collected: 11/14/16 13:20
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.387	U	0.256	0.258	1.00	0.394	pCi/L	11/25/16 15:41	12/28/16 14:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.9*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*
Y Carrier	*93.5*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8D — **Lab Sample ID: 280-91080-4**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.364	U	0.247	0.249	1.00	0.381	pCi/L	11/25/16 15:41	12/28/16 14:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.2*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*
Y Carrier	*90.1*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*

Client Sample ID: MW-8EB — **Lab Sample ID: 280-91080-5**
Date Collected: 11/14/16 13:50 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.236	U	0.263	0.264	1.00	0.432	pCi/L	11/25/16 15:41	12/28/16 14:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.2*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*
Y Carrier	*93.1*		*40 - 110*	*11/25/16 15:41*	*12/28/16 14:30*	*1*

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-91080-1**
Date Collected: 11/15/16 10:30 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.911**		0.402	0.407	5.00	0.442	pCi/L		12/29/16 18:35	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-91080-2**
Date Collected: 11/15/16 12:25 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.363	U	0.328	0.329	5.00	0.440	pCi/L		12/29/16 18:35	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-91080-3**
Date Collected: 11/14/16 13:20 — **Matrix: Water**
Date Received: 11/16/16 10:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.519**		0.334	0.336	5.00	0.394	pCi/L		12/29/16 18:35	1

Client Sample Results

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

TestAmerica Job ID: 280-91080-1

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

Client Sample ID: MW-8D
Date Collected: 11/14/16 13:20
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.618**		0.335	0.337	5.00	0.381	pCi/L		12/29/16 18:35	1

Client Sample ID: MW-8EB
Date Collected: 11/14/16 13:50
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.316	U	0.340	0.340	5.00	0.432	pCi/L		12/29/16 18:35	1

QC Sample Results

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

TestAmerica Job ID: 280-91080-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-256407/1-A
Matrix: Water
Analysis Batch: 257467

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		200	8.1	ug/L		11/19/16 15:00	11/29/16 14:48	1

Lab Sample ID: LCS 240-256407/2-A
Matrix: Water
Analysis Batch: 257467

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1070		ug/L		107	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-256407/1-A
Matrix: Water
Analysis Batch: 257023

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/19/16 15:00	11/23/16 22:59	1
Arsenic	ND		0.0050	0.00035	mg/L		11/19/16 15:00	11/23/16 22:59	1
Barium	0.00131	J	0.0050	0.00052	mg/L		11/19/16 15:00	11/23/16 22:59	1
Calcium	0.288	J	1.0	0.043	mg/L		11/19/16 15:00	11/23/16 22:59	1
Cadmium	ND		0.0010	0.00031	mg/L		11/19/16 15:00	11/23/16 22:59	1
Cobalt	ND		0.0010	0.00013	mg/L		11/19/16 15:00	11/23/16 22:59	1
Chromium	ND		0.0020	0.00026	mg/L		11/19/16 15:00	11/23/16 22:59	1
Molybdenum	ND		0.010	0.00051	mg/L		11/19/16 15:00	11/23/16 22:59	1
Lead	0.000239	J	0.0010	0.00016	mg/L		11/19/16 15:00	11/23/16 22:59	1
Selenium	ND		0.0050	0.00048	mg/L		11/19/16 15:00	11/23/16 22:59	1
Thallium	ND		0.0010	0.00028	mg/L		11/19/16 15:00	11/23/16 22:59	1

Lab Sample ID: MB 240-256407/1-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00040	mg/L		11/19/16 15:00	12/09/16 12:38	1
Lithium	ND		0.0080	0.00016	mg/L		11/19/16 15:00	12/09/16 12:38	1

Lab Sample ID: LCS 240-256407/3-A
Matrix: Water
Analysis Batch: 257023

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0994		mg/L		99	80 - 120
Arsenic	1.00	0.978		mg/L		98	80 - 120
Barium	1.00	0.980		mg/L		98	80 - 120
Calcium	10.0	10.4		mg/L		104	80 - 120
Cadmium	1.00	1.05		mg/L		105	80 - 120
Cobalt	1.00	1.13		mg/L		113	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Molybdenum	0.100	0.0987		mg/L		99	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-256407/3-A
Matrix: Water
Analysis Batch: 257023

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	1.04		mg/L		104	80 - 120
Selenium	1.00	0.961		mg/L		96	80 - 120
Thallium	0.250	0.253		mg/L		101	80 - 120

Lab Sample ID: LCS 240-256407/3-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 256407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	1.00	1.02		mg/L		102	80 - 120
Lithium	0.100	0.0952		mg/L		95	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-354223/1-A
Matrix: Water
Analysis Batch: 354354

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354223

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0500	J	0.20	0.027	ug/L		12/05/16 11:48	12/05/16 21:23	1

Lab Sample ID: LCS 280-354223/2-A
Matrix: Water
Analysis Batch: 354354

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354223

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.73		ug/L		95	84 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-353774/4
Matrix: Water
Analysis Batch: 353774

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 280-354137/4
Matrix: Water
Analysis Batch: 354137

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: LCS 280-354355/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 354355

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: 280-91080-5 DU — **Client Sample ID: MW-8EB**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 354355

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	6.4	HF	6.4		SU		0	5
Temperature	22.3	HF	22.0		Degrees C		1	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-355076/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355076

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/10/16 11:31	1
Fluoride	ND		0.50	0.060	mg/L			12/10/16 11:31	1
Sulfate	ND		5.0	0.23	mg/L			12/10/16 11:31	1

Lab Sample ID: LCS 280-355076/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355076

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.11		mg/L		102	90 - 110
Sulfate	100	99.9		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-355076/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355076

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	5.12		mg/L		102	90 - 110	0	10
Sulfate	100	99.9		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-355076/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355076

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.53	J	mg/L		101	50 - 150
Fluoride	0.200	0.177	J	mg/L		89	50 - 150
Sulfate	2.50	2.35	J	mg/L		94	50 - 150

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

Lab Sample ID: MB 280-355159/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355159

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/12/16 11:10	1
Fluoride	ND		0.50	0.060	mg/L			12/12/16 11:10	1
Sulfate	ND		5.0	0.23	mg/L			12/12/16 11:10	1

Lab Sample ID: LCS 280-355159/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355159

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.10		mg/L		102	90 - 110
Sulfate	100	99.5		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-355159/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355159

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	5.12		mg/L		102	90 - 110	0	10
Sulfate	100	99.9		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-355159/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 355159

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.56	J	mg/L		102	50 - 150
Fluoride	0.200	0.169	J	mg/L		85	50 - 150
Sulfate	2.50	2.45	J	mg/L		98	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-352410/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 352410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/21/16 10:12	1

Lab Sample ID: LCS 280-352410/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 352410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	494		mg/L		99	86 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: MB 280-353491/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 353491

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/29/16 08:42	1

Lab Sample ID: LCS 280-353491/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 353491

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	494		mg/L		99	86 - 110

Lab Sample ID: LCSD 280-353491/3 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 353491

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	500	479		mg/L		96	86 - 110	3	20

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

Lab Sample ID: MB 280-352478/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 352478

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			11/21/16 14:39	1

Lab Sample ID: LCS 280-352478/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 352478

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.8		mg/L		93	86 - 114

Lab Sample ID: LCSD 280-352478/2 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 352478

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	90.8		mg/L		91	86 - 114	2	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-280948/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 285727 — **Prep Batch: 280948**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.1147	U	0.185	0.185	1.00	0.437	pCi/L	11/25/16 15:16	12/28/16 22:33	1

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

Lab Sample ID: MB 160-280948/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 285727 — **Prep Batch: 280948**

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	80.3		40 - 110	11/25/16 15:16	12/28/16 22:33	1

Lab Sample ID: LCS 160-280948/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 285727 — **Prep Batch: 280948**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.1	14.62		1.92	1.00	0.550	pCi/L	132	68 - 137

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	70.1		40 - 110

Lab Sample ID: LCSD 160-280948/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 285758 — **Prep Batch: 280948**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.1	12.35		1.57	1.00	0.432	pCi/L	111	68 - 137	0.65	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	75.8		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-280950/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 285700 — **Prep Batch: 280950**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2889	U	0.284	0.285	1.00	0.461	pCi/L	11/25/16 15:41	12/28/16 14:28	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	80.3		40 - 110	11/25/16 15:41	12/28/16 14:28	1
Y Carrier	86.7		40 - 110	11/25/16 15:41	12/28/16 14:28	1

Lab Sample ID: LCS 160-280950/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 285700 — **Prep Batch: 280950**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	14.1	18.48		2.01	1.00	0.503	pCi/L	131	56 - 140

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

Lab Sample ID: LCS 160-280950/2-A
Matrix: Water
Analysis Batch: 285700

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 280950

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	70.1		40 - 110
Y Carrier	87.1		40 - 110

Lab Sample ID: LCSD 160-280950/3-A
Matrix: Water
Analysis Batch: 285700

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 280950

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			14.1	16.56		1.80	1.00	0.400	pCi/L	118	56 - 140	0.50	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	75.8		40 - 110
Y Carrier	86.7		40 - 110

QC Association Summary

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

TestAmerica Job ID: 280-91080-1

Metals

Prep Batch: 256407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total Recoverable	Water	3005A	
280-91080-2	MW-7	Total Recoverable	Water	3005A	
280-91080-3	MW-8	Total Recoverable	Water	3005A	
280-91080-4	MW-8D	Total Recoverable	Water	3005A	
280-91080-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-256407/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-256407/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-256407/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 257023

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total Recoverable	Water	6020A	256407
280-91080-2	MW-7	Total Recoverable	Water	6020A	256407
280-91080-3	MW-8	Total Recoverable	Water	6020A	256407
280-91080-4	MW-8D	Total Recoverable	Water	6020A	256407
280-91080-5	MW-8EB	Total Recoverable	Water	6020A	256407
MB 240-256407/1-A	Method Blank	Total Recoverable	Water	6020A	256407
LCS 240-256407/3-A	Lab Control Sample	Total Recoverable	Water	6020A	256407

Analysis Batch: 257467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-3	MW-8	Total Recoverable	Water	6010C	256407
280-91080-4	MW-8D	Total Recoverable	Water	6010C	256407
280-91080-5	MW-8EB	Total Recoverable	Water	6010C	256407
MB 240-256407/1-A	Method Blank	Total Recoverable	Water	6010C	256407
LCS 240-256407/2-A	Lab Control Sample	Total Recoverable	Water	6010C	256407

Analysis Batch: 257502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total Recoverable	Water	6010C	256407
280-91080-2	MW-7	Total Recoverable	Water	6010C	256407

Analysis Batch: 258864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-256407/1-A	Method Blank	Total Recoverable	Water	6020A	256407
LCS 240-256407/3-A	Lab Control Sample	Total Recoverable	Water	6020A	256407

Analysis Batch: 259036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total Recoverable	Water	6020A	256407
280-91080-2	MW-7	Total Recoverable	Water	6020A	256407
280-91080-3	MW-8	Total Recoverable	Water	6020A	256407
280-91080-4	MW-8D	Total Recoverable	Water	6020A	256407
280-91080-5	MW-8EB	Total Recoverable	Water	6020A	256407

Prep Batch: 354223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	7470A	
280-91080-2	MW-7	Total/NA	Water	7470A	
280-91080-3	MW-8	Total/NA	Water	7470A	
280-91080-4	MW-8D	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 354223 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-5	MW-8EB	Total/NA	Water	7470A	
MB 280-354223/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-354223/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 354354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	7470A	354223
280-91080-2	MW-7	Total/NA	Water	7470A	354223
280-91080-3	MW-8	Total/NA	Water	7470A	354223
280-91080-4	MW-8D	Total/NA	Water	7470A	354223
280-91080-5	MW-8EB	Total/NA	Water	7470A	354223
MB 280-354223/1-A	Method Blank	Total/NA	Water	7470A	354223
LCS 280-354223/2-A	Lab Control Sample	Total/NA	Water	7470A	354223

General Chemistry

Analysis Batch: 352410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-3	MW-8	Total/NA	Water	SM 2540C	
280-91080-4	MW-8D	Total/NA	Water	SM 2540C	
280-91080-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-352410/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-352410/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 352478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	SM 2540D	
280-91080-2	MW-7	Total/NA	Water	SM 2540D	
280-91080-3	MW-8	Total/NA	Water	SM 2540D	
280-91080-4	MW-8D	Total/NA	Water	SM 2540D	
280-91080-5	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-352478/3	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-352478/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-352478/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 353491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	SM 2540C	
280-91080-2	MW-7	Total/NA	Water	SM 2540C	
MB 280-353491/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-353491/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-353491/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 353774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	9040B	
280-91080-2	MW-7	Total/NA	Water	9040B	
LCS 280-353774/4	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 354137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-3	MW-8	Total/NA	Water	9040B	
280-91080-4	MW-8D	Total/NA	Water	9040B	
LCS 280-354137/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 354355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-354355/4	Lab Control Sample	Total/NA	Water	9040B	
280-91080-5 DU	MW-8EB	Total/NA	Water	9040B	

Analysis Batch: 355076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	9056A	
280-91080-1	MW-6	Total/NA	Water	9056A	
280-91080-2	MW-7	Total/NA	Water	9056A	
280-91080-2	MW-7	Total/NA	Water	9056A	
280-91080-3	MW-8	Total/NA	Water	9056A	
280-91080-3	MW-8	Total/NA	Water	9056A	
280-91080-4	MW-8D	Total/NA	Water	9056A	
MB 280-355076/6	Method Blank	Total/NA	Water	9056A	
LCS 280-355076/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-355076/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-355076/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 355159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-4	MW-8D	Total/NA	Water	9056A	
280-91080-5	MW-8EB	Total/NA	Water	9056A	
MB 280-355159/6	Method Blank	Total/NA	Water	9056A	
LCS 280-355159/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-355159/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-355159/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 280948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	PrecSep-21	
280-91080-2	MW-7	Total/NA	Water	PrecSep-21	
280-91080-3	MW-8	Total/NA	Water	PrecSep-21	
280-91080-4	MW-8D	Total/NA	Water	PrecSep-21	
280-91080-5	MW-8EB	Total/NA	Water	PrecSep-21	
MB 160-280948/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-280948/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-280948/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 280950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-1	MW-6	Total/NA	Water	PrecSep_0	
280-91080-2	MW-7	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 280950 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-91080-3	MW-8	Total/NA	Water	PrecSep_0	
280-91080-4	MW-8D	Total/NA	Water	PrecSep_0	
280-91080-5	MW-8EB	Total/NA	Water	PrecSep_0	
MB 160-280950/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-280950/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-280950/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-91080-1

Client Sample ID: MW-6

Date Collected: 11/15/16 10:30
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-1
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	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			257502	11/30/16 13:25	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			257023	11/24/16 00:14	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			259036	12/09/16 16:47	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	354223	12/05/16 11:48	CDH	TAL DEN
Total/NA	Analysis	7470A		1			354354	12/05/16 22:12	CDH	TAL DEN
Total/NA	Analysis	9040B		1			353774	11/30/16 14:01	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	355076	12/10/16 14:10	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	355076	12/10/16 14:27	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	353491	11/29/16 08:42	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	352478	11/21/16 14:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.37 mL	1.0 g	280948	11/25/16 15:16	AS	TAL SL
Total/NA	Analysis	9315		1			285757	12/29/16 06:47	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.37 mL	1.0 g	280950	11/25/16 15:41	AS	TAL SL
Total/NA	Analysis	9320		1			285700	12/28/16 14:30	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			285852	12/29/16 18:35	RTM	TAL SL

Client Sample ID: MW-7

Date Collected: 11/15/16 12:25
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-2
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	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			257502	11/30/16 13:30	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			257023	11/24/16 00:18	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			259036	12/09/16 16:51	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	354223	12/05/16 11:48	CDH	TAL DEN
Total/NA	Analysis	7470A		1			354354	12/05/16 22:14	CDH	TAL DEN
Total/NA	Analysis	9040B		1			353774	11/30/16 14:05	MMC	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	355076	12/10/16 14:45	AFB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	355076	12/10/16 15:38	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	353491	11/29/16 08:42	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	352478	11/21/16 14:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.91 mL	1.0 g	280948	11/25/16 15:16	AS	TAL SL
Total/NA	Analysis	9315		1			285757	12/29/16 06:47	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.91 mL	1.0 g	280950	11/25/16 15:41	AS	TAL SL
Total/NA	Analysis	9320		1			285700	12/28/16 14:30	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			285852	12/29/16 18:35	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-91080-1

Client Sample ID: MW-8

Lab Sample ID: 280-91080-3

Date Collected: 11/14/16 13:20
Matrix: Water
Date Received: 11/16/16 10:00

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	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			257467	11/29/16 16:07	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			257023	11/24/16 00:22	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			259036	12/09/16 17:04	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	354223	12/05/16 11:48	CDH	TAL DEN
Total/NA	Analysis	7470A		1			354354	12/05/16 22:16	CDH	TAL DEN
Total/NA	Analysis	9040B		1			354137	12/01/16 13:58	MMC	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	355076	12/10/16 15:56	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	355076	12/10/16 21:32	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	352410	11/21/16 10:12	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	352478	11/21/16 14:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	280948	11/25/16 15:16	AS	TAL SL
Total/NA	Analysis	9315		1			285757	12/29/16 06:47	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	280950	11/25/16 15:41	AS	TAL SL
Total/NA	Analysis	9320		1			285700	12/28/16 14:30	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			285852	12/29/16 18:35	RTM	TAL SL

Client Sample ID: MW-8D

Lab Sample ID: 280-91080-4

Date Collected: 11/14/16 13:20
Matrix: Water
Date Received: 11/16/16 10:00

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	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			257467	11/29/16 16:38	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			257023	11/24/16 00:26	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			259036	12/09/16 17:08	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	354223	12/05/16 11:48	CDH	TAL DEN
Total/NA	Analysis	7470A		1			354354	12/05/16 22:18	CDH	TAL DEN
Total/NA	Analysis	9040B		1			354137	12/01/16 14:03	MMC	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	355076	12/10/16 16:31	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	355159	12/12/16 11:27	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	352410	11/21/16 10:12	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	352478	11/21/16 14:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.49 mL	1.0 g	280948	11/25/16 15:16	AS	TAL SL
Total/NA	Analysis	9315		1			285757	12/29/16 06:48	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.49 mL	1.0 g	280950	11/25/16 15:41	AS	TAL SL
Total/NA	Analysis	9320		1			285700	12/28/16 14:30	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			285852	12/29/16 18:35	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-91080-1

Client Sample ID: MW-8EB

Date Collected: 11/14/16 13:50
Date Received: 11/16/16 10:00

Lab Sample ID: 280-91080-5

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	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			257467	11/29/16 16:11	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			257023	11/24/16 00:39	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	256407	11/19/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			259036	12/09/16 17:12	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	354223	12/05/16 11:48	CDH	TAL DEN
Total/NA	Analysis	7470A		1			354354	12/05/16 22:21	CDH	TAL DEN
Total/NA	Analysis	9040B		1			354355	12/05/16 16:55	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	355159	12/12/16 11:45	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	352410	11/21/16 10:12	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	352478	11/21/16 14:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.49 mL	1.0 g	280948	11/25/16 15:16	AS	TAL SL
Total/NA	Analysis	9315		1			285757	12/29/16 06:48	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.49 mL	1.0 g	280950	11/25/16 15:41	AS	TAL SL
Total/NA	Analysis	9320		1			285700	12/28/16 14:30	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			285852	12/29/16 18:35	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

Certification Summary

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

TestAmerica Job ID: 280-91080-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

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

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17 *
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17 *
Kentucky (UST)	State Program	4	58	02-23-17 *
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-16 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17 *
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17 *
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17
USDA	Federal		P330-13-00319	11-26-16 *
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-17 *
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	003757	11-30-16 *
Iowa	State Program	7	373	12-01-16 *
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17

* Certification renewal pending - certification considered valid.

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana (DW)	NELAP	6	LA160008	12-31-16 *
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542016-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-14-0016	01-09-17
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17

* Certification renewal pending - 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
Phone: 720 933 7496
Lab PM: Rothmeyer, Stephanie K
E-Mail: stephanie.rothmeyer@testamericainc.com
Carrier Tracking No(s):
COC No:
Page: Page 1 of 1
Job #:

Client Contact: Anna Lundin
Company: HDR Inc
Address: 9781 S. Meridian Blve Suite 400
City: Englewood
State, Zip: CO, 80112
Phone: 720-633-2380(Tel)
Email: anna.lundin@hdrinc.com
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Colorado

Due Date Requested:
TAT Requested (days): Standard
PO #: DEN-001
WO #:
Project #: 28014377
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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~ ~~TK~~				Water		N							
MW-6	11-15-16	1030	G	Water		N	✓	✓	✓	✓	✓		
MW-7	11-15-16	1225	G	Water		N	✓	✓	✓	✓	✓		
MW-8	11-14-16	1320	G	Water		N	✓	✓	✓	✓	✓		
~~Field Duplicate~~ TK MW-8D	11-14-16	1320	G	Water		N	✓	✓	✓	✓	✓		
~~Equipment Blank~~ TK MW-8EB	11-14-16	1350	G	Water		N	✓	✓	✓	✓	✓		

280-91080 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: ~~Tara Kent~~ TK Date: ~~11-16-16~~ TK Time: ~~0755~~ TK Method of Shipment: NA

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Tara Kent	11-16-16 0755		[illegible]	11/16/16 0755	TA Denver

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.1, 1.1 IRS Cf 0.0 transferred SPW 11-16-16

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

280-91080 Chain of Custody

Client Information (Sub Contract Lab)

Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North, ,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Xcel Energy CCR - Hayden Station

Sampler:
Phone:
Due Date Requested: 12/15/2016
TAT Requested (days):
PO #:
WO #:
Project #: 28014377
SSOW#:

Lab PM: Rothmeyer, Stephai
E-Mail: stephanie.rothmeyer@testamericainc.com | Colorado
Accreditations Required (See note): DoD ELAP - A2LA

COC No: 280-378156.1
Page: Page 1 of 1
Job #: 280-91080-1

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:

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)	Ra226Ra228_GFPC/ Combined Radium-226 and Radium-228	9315_Ra226/PrecSep_21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-91080-1)	11/15/16	10:30 Mountain		Water			X	X	X	2	
MW-7 (280-91080-2)	11/15/16	12:25 Mountain		Water			X	X	X	2	
MW-8 (280-91080-3)	11/14/16	13:20 Mountain		Water			X	X	X	2	
MW-8D (280-91080-4)	11/14/16	13:20 Mountain		Water			X	X	X	2	
MW-8EB (280-91080-5)	11/14/16	13:50 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
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
Se	11-17-16 1505	TAD	[signature]	11-18-16 9:00	TA
				11-18-16 9:00	TA

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

0.8/C1.2

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: 280-378155.1
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 #: 280-91080-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 12/12/2016			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden Station	SSOW#:			

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:

S.7

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/3005A (MOD) Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-6 (280-91080-1)	11/15/16	10:30 Mountain		Water			X	X	1	, Use Collision Cell
MW-7 (280-91080-2)	11/15/16	12:25 Mountain		Water			X	X	1	Use Collision Cell
MW-8 (280-91080-3)	11/14/16	13:20 Mountain		Water			X	X	1	, Use Collision Cell
MW-8D (280-91080-4)	11/14/16	13:20 Mountain		Water			X	X	1	Use Collision Cell
MW-8EB (280-91080-5)	11/14/16	13:50 Mountain		Water			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: Se	Date/Time: 11-17-16 1505	Company: TAD	Received by:	Date/Time: 11/18/16 920	Company: 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:

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

Canton Facility

Client TA Denver Site Name_____ Cooler unpacked by: DSD

Cooler Received on 11/18/16 Opened on 11/18/16

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

TestAmerica Cooler # _____ 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

☐ See Multiple Cooler Form

1. Cooler temperature upon receipt
   IR GUN# IR-8 (CF +0.4 °C) Observed Cooler Temp. 0.8 °C Corrected Cooler Temp. 1.2 °C
   IR GUN #36 (CF +1.3°C) Observed Cooler Temp._____ °C Corrected Cooler Temp._____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC682547**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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): _____.

Ref: SOP NC-SC-0005, Sample Receiving

L:\QAQC\QA Department\QA TARDIS\Document Control\Work Instructions\In Revision\WI-NC-099-101216 Cooler Receipt Form.doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-91080-1

Login Number: 91080
List Number: 1
Creator: Woodworth, Sean 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: 280-91080-1

Login Number: 91080
List Number: 3
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 11/19/16 05:42 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.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0, 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?	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 - Hayden

TestAmerica Job ID: 280-91080-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)								
Lab Sample ID	Client Sample ID	Ba (40-110)								
280-91080-1	MW-6	84.0								
280-91080-2	MW-7	86.3								
280-91080-3	MW-8	82.9								
280-91080-4	MW-8D	85.2								
280-91080-5	MW-8EB	79.2								
LCS 160-280948/2-A	Lab Control Sample	70.1								
LCSD 160-280948/3-A	Lab Control Sample Dup	75.8								
MB 160-280948/1-A	Method Blank	80.3								

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)								
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)							
280-91080-1	MW-6	84.0	90.5							
280-91080-2	MW-7	86.3	86.7							
280-91080-3	MW-8	82.9	93.5							
280-91080-4	MW-8D	85.2	90.1							
280-91080-5	MW-8EB	79.2	93.1							
LCS 160-280950/2-A	Lab Control Sample	70.1	87.1							
LCSD 160-280950/3-A	Lab Control Sample Dup	75.8	86.7							
MB 160-280950/1-A	Method Blank	80.3	86.7							

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-94604-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
4/4/2017 2:30:02 PM

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

TestAmerica Job ID: 280-94604-1

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.
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.

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 280-94604-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-94604-1

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 3/9/2017 at 7:39 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.2º C, 1.3º C and 1.9º C.

TOTAL RECOVERABLE METALS
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 03/14/2017 and 03/15/2017 and analyzed on 03/15/2017 and 03/16/2017.

Boron was detected in method blank MB 240-270479/1-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-6 (280-94604-1)[5X] and MW-7 (280-94604-2)[5X] 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 RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 03/14/2017 and 03/15/2017 and analyzed on 03/15/2017 and 03/16/2017.

Several analytes were detected in method blank MB 240-270479/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Barium, Calcium and Lithium were detected in method blank MB 240-270651/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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.

Calcium failed the recovery criteria low for the MS and MSD of sample 240-76603-1 in batch 240-270801. 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: 280-94604-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL MERCURY
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 03/24/2017.

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

TOTAL DISSOLVED SOLIDS
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 03/10/2017.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/13/2017.

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

CORROSIVITY (PH)
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 03/10/2017 and 03/15/2017.

Sample MW-8EB (280-94604-5) did not stabilize in the first run and was rerun. The rerun did not stabilize either, so the data is reported as is.

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

ANIONS (28 DAYS)
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 03/28/2017 and 03/29/2017.

Chloride and Sulfate were detected in method blank MB 280-367232/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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-6 (280-94604-1)[20X], MW-7 (280-94604-2)[2X], MW-7 (280-94604-2)[20X], MW-8 (280-94604-3)[2X], MW-8 (280-94604-3) [50X], MW-8D (280-94604-4)[2X] and MW-8D (280-94604-4)[50X] 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-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/13/2017 and analyzed on 04/04/2017.

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

RADIUM-228
Samples MW-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/13/2017 and analyzed on 03/28/2017.

Job ID: 280-94604-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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-6 (280-94604-1), MW-7 (280-94604-2), MW-8 (280-94604-3), MW-8D (280-94604-4) and MW-8EB (280-94604-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 04/04/2017.

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 - Hayden

TestAmerica Job ID: 280-94604-1

Client Sample ID: MW-6 — Lab Sample ID: 280-94604-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	39	B	1.0	0.041	mg/L	5		6010C	Total Recoverable
Antimony	0.0017	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0031	J B	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0072	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Beryllium	0.00040	J	0.0010	0.00040	mg/L	1		6020A	Total Recoverable
Calcium	330	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cadmium	0.00048	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cobalt	0.00033	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.00049	J B	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	1.2		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00087	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.11	B	0.0080	0.00016	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	68		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.36	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	2900		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-94604-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	48	B	1.0	0.041	mg/L	5		6010C	Total Recoverable
Antimony	0.00060	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0031	J B	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0058	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	430	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cadmium	0.00035	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Chromium	0.00045	J B	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.97		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00078	J B	0.0010	0.00016	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 - Hayden

TestAmerica Job ID: 280-94604-1

Client Sample ID: MW-7 (Continued) — Lab Sample ID: 280-94604-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0097		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.28	B	0.0080	0.00016	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	130		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.17	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3200		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4900		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-94604-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.94		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0039	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0061	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	400	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00023	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Chromium	0.0019	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.00082	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00034	J	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Selenium	0.047		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.72	B	0.0080	0.00016	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	22.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	210		6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	4500		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7300		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8D — Lab Sample ID: 280-94604-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.93	B	0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0058	B	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.0058	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	170	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Cobalt	0.00026	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8D (Continued) — Lab Sample ID: 280-94604-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.00039	J B	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.014		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00055	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Selenium	0.039		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Lithium	0.60	B	0.0080	0.00016	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	23.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	220		6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	4400		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7000		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8EB — Lab Sample ID: 280-94604-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.037	J B	0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.00061	J B	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Calcium	0.044	J B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00041	J B	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0026	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Lead	0.00049	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.00061	J B	0.0080	0.00016	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	0.56	J B	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	0.60	J B	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-94604-1

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

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 - Hayden

TestAmerica Job ID: 280-94604-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-94604-1	MW-6	Water	03/08/17 12:20	03/09/17 07:39
280-94604-2	MW-7	Water	03/08/17 10:55	03/09/17 07:39
280-94604-3	MW-8	Water	03/07/17 14:10	03/09/17 07:39
280-94604-4	MW-8D	Water	03/07/17 14:10	03/09/17 07:39
280-94604-5	MW-8EB	Water	03/07/17 14:55	03/09/17 07:39

Client Sample Results

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

TestAmerica Job ID: 280-94604-1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	39	B	1.0	0.041	mg/L		03/14/17 14:00	03/15/17 15:50	5

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	48	B	1.0	0.041	mg/L		03/14/17 14:00	03/15/17 15:55	5

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.94		0.20	0.0081	mg/L		03/15/17 14:00	03/16/17 18:29	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-94604-4**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.93	B	0.20	0.0081	mg/L		03/14/17 14:00	03/15/17 14:57	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.037	J B	0.20	0.0081	mg/L		03/14/17 14:00	03/15/17 15:02	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0017	J	0.0020	0.00027	mg/L		03/14/17 14:00	03/15/17 15:41	1
Arsenic	0.0031	J B	0.0050	0.00035	mg/L		03/14/17 14:00	03/15/17 15:41	1
Barium	0.0072	B	0.0050	0.00052	mg/L		03/14/17 14:00	03/15/17 15:41	1
Beryllium	0.00040	J	0.0010	0.00040	mg/L		03/14/17 14:00	03/15/17 15:41	1
Calcium	330	B	1.0	0.043	mg/L		03/14/17 14:00	03/15/17 15:41	1
Cadmium	0.00048	J	0.0010	0.00031	mg/L		03/14/17 14:00	03/15/17 15:41	1
Cobalt	0.00033	J	0.0010	0.00013	mg/L		03/14/17 14:00	03/15/17 15:41	1
Chromium	0.00049	J B	0.0020	0.00026	mg/L		03/14/17 14:00	03/15/17 15:41	1
Molybdenum	1.2		0.010	0.00051	mg/L		03/14/17 14:00	03/15/17 15:41	1
Lead	0.00087	J B	0.0010	0.00016	mg/L		03/14/17 14:00	03/15/17 15:41	1
Selenium	0.015		0.0050	0.00048	mg/L		03/14/17 14:00	03/15/17 15:41	1
Thallium	ND		0.0010	0.00028	mg/L		03/14/17 14:00	03/15/17 15:41	1
Lithium	0.11	B	0.0080	0.00016	mg/L		03/14/17 14:00	03/15/17 15:41	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00060	J	0.0020	0.00027	mg/L		03/14/17 14:00	03/15/17 15:46	1

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

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0031	J B	0.0050	0.00035	mg/L		03/14/17 14:00	03/15/17 15:46	1
Barium	0.0058	B	0.0050	0.00052	mg/L		03/14/17 14:00	03/15/17 15:46	1
Beryllium	ND		0.0010	0.00040	mg/L		03/14/17 14:00	03/15/17 15:46	1
Calcium	430	B	1.0	0.043	mg/L		03/14/17 14:00	03/15/17 15:46	1
Cadmium	0.00035	J	0.0010	0.00031	mg/L		03/14/17 14:00	03/15/17 15:46	1
Cobalt	ND		0.0010	0.00013	mg/L		03/14/17 14:00	03/15/17 15:46	1
Chromium	0.00045	J B	0.0020	0.00026	mg/L		03/14/17 14:00	03/15/17 15:46	1
Molybdenum	0.97		0.010	0.00051	mg/L		03/14/17 14:00	03/15/17 15:46	1
Lead	0.00078	J B	0.0010	0.00016	mg/L		03/14/17 14:00	03/15/17 15:46	1
Selenium	0.0097		0.0050	0.00048	mg/L		03/14/17 14:00	03/15/17 15:46	1
Thallium	ND		0.0010	0.00028	mg/L		03/14/17 14:00	03/15/17 15:46	1
Lithium	0.28	B	0.0080	0.00016	mg/L		03/14/17 14:00	03/15/17 15:46	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/15/17 14:00	03/16/17 15:01	1
Arsenic	0.0039	J	0.0050	0.00035	mg/L		03/15/17 14:00	03/16/17 15:01	1
Barium	0.0061	B	0.0050	0.00052	mg/L		03/15/17 14:00	03/16/17 15:01	1
Beryllium	ND		0.0010	0.00040	mg/L		03/15/17 14:00	03/16/17 15:01	1
Calcium	400	B	1.0	0.043	mg/L		03/15/17 14:00	03/16/17 15:01	1
Cadmium	ND		0.0010	0.00031	mg/L		03/15/17 14:00	03/16/17 15:01	1
Cobalt	0.00023	J	0.0010	0.00013	mg/L		03/15/17 14:00	03/16/17 15:01	1
Chromium	0.0019	J	0.0020	0.00026	mg/L		03/15/17 14:00	03/16/17 15:01	1
Molybdenum	0.00082	J	0.010	0.00051	mg/L		03/15/17 14:00	03/16/17 15:01	1
Lead	0.00034	J	0.0010	0.00016	mg/L		03/15/17 14:00	03/16/17 15:01	1
Selenium	0.047		0.0050	0.00048	mg/L		03/15/17 14:00	03/16/17 15:01	1
Thallium	ND		0.0010	0.00028	mg/L		03/15/17 14:00	03/16/17 15:01	1
Lithium	0.72	B	0.0080	0.00016	mg/L		03/15/17 14:00	03/16/17 15:01	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-94604-4**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/14/17 14:00	03/15/17 15:50	1
Arsenic	0.0058	B	0.0050	0.00035	mg/L		03/14/17 14:00	03/15/17 15:50	1
Barium	0.0058	B	0.0050	0.00052	mg/L		03/14/17 14:00	03/15/17 15:50	1
Beryllium	ND		0.0010	0.00040	mg/L		03/14/17 14:00	03/15/17 15:50	1
Calcium	170	B	1.0	0.043	mg/L		03/14/17 14:00	03/15/17 15:50	1
Cadmium	ND		0.0010	0.00031	mg/L		03/14/17 14:00	03/15/17 15:50	1
Cobalt	0.00026	J	0.0010	0.00013	mg/L		03/14/17 14:00	03/15/17 15:50	1
Chromium	0.00039	J B	0.0020	0.00026	mg/L		03/14/17 14:00	03/15/17 15:50	1
Molybdenum	0.014		0.010	0.00051	mg/L		03/14/17 14:00	03/15/17 15:50	1
Lead	0.00055	J B	0.0010	0.00016	mg/L		03/14/17 14:00	03/15/17 15:50	1
Selenium	0.039		0.0050	0.00048	mg/L		03/14/17 14:00	03/15/17 15:50	1
Thallium	ND		0.0010	0.00028	mg/L		03/14/17 14:00	03/15/17 15:50	1
Lithium	0.60	B	0.0080	0.00016	mg/L		03/14/17 14:00	03/15/17 15:50	1

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

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/14/17 14:00	03/15/17 15:54	1
Arsenic	**0.00061**	**J B**	0.0050	0.00035	mg/L		03/14/17 14:00	03/15/17 15:54	1
Barium	ND		0.0050	0.00052	mg/L		03/14/17 14:00	03/15/17 15:54	1
Beryllium	ND		0.0010	0.00040	mg/L		03/14/17 14:00	03/15/17 15:54	1
Calcium	**0.044**	**J B**	1.0	0.043	mg/L		03/14/17 14:00	03/15/17 15:54	1
Cadmium	ND		0.0010	0.00031	mg/L		03/14/17 14:00	03/15/17 15:54	1
Cobalt	ND		0.0010	0.00013	mg/L		03/14/17 14:00	03/15/17 15:54	1
Chromium	**0.00041**	**J B**	0.0020	0.00026	mg/L		03/14/17 14:00	03/15/17 15:54	1
Molybdenum	**0.0026**	**J**	0.010	0.00051	mg/L		03/14/17 14:00	03/15/17 15:54	1
Lead	**0.00049**	**J B**	0.0010	0.00016	mg/L		03/14/17 14:00	03/15/17 15:54	1
Selenium	ND		0.0050	0.00048	mg/L		03/14/17 14:00	03/15/17 15:54	1
Thallium	ND		0.0010	0.00028	mg/L		03/14/17 14:00	03/15/17 15:54	1
Lithium	**0.00061**	**J B**	0.0080	0.00016	mg/L		03/14/17 14:00	03/15/17 15:54	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/24/17 11:15	03/24/17 19:06	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/24/17 11:15	03/24/17 19:09	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/24/17 11:15	03/24/17 19:11	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-94604-4**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/24/17 11:15	03/24/17 19:13	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/24/17 11:15	03/24/17 19:15	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU			03/10/17 13:52	1
Temperature	22.7	HF	1.0	1.0	Degrees C			03/10/17 13:52	1
Chloride	68		3.0	0.25	mg/L			03/28/17 22:50	1
Fluoride	0.36	J	0.50	0.060	mg/L			03/28/17 22:50	1
Sulfate	2900		100	4.6	mg/L			03/28/17 23:08	20
Total Dissolved Solids (TDS)	4500		40	19	mg/L			03/10/17 09:02	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			03/13/17 16:50	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.9	HF	0.1	0.1	SU			03/10/17 13:55	1
Temperature	22.8	HF	1.0	1.0	Degrees C			03/10/17 13:55	1
Chloride	130		6.0	0.51	mg/L			03/28/17 23:26	2
Fluoride	0.17	J	1.0	0.12	mg/L			03/28/17 23:26	2
Sulfate	3200		100	4.6	mg/L			03/28/17 23:44	20
Total Dissolved Solids (TDS)	4900		40	19	mg/L			03/10/17 09:02	1
Total Suspended Solids	4.0		4.0	1.1	mg/L			03/13/17 16:50	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

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			03/10/17 14:00	1
Temperature	22.9	HF	1.0	1.0	Degrees C			03/10/17 14:00	1
Chloride	210		6.0	0.51	mg/L			03/29/17 06:58	2
Fluoride	ND		1.0	0.12	mg/L			03/29/17 06:58	2
Sulfate	4500		250	12	mg/L			03/29/17 07:17	50
Total Dissolved Solids (TDS)	7300		40	19	mg/L			03/10/17 09:02	1
Total Suspended Solids	4.0		4.0	1.1	mg/L			03/13/17 16:50	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-94604-4**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

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			03/10/17 14:05	1
Temperature	23.0	HF	1.0	1.0	Degrees C			03/10/17 14:05	1
Chloride	220		6.0	0.51	mg/L			03/29/17 07:35	2
Fluoride	ND		1.0	0.12	mg/L			03/29/17 07:35	2
Sulfate	4400		250	12	mg/L			03/29/17 07:52	50
Total Dissolved Solids (TDS)	7000		40	19	mg/L			03/10/17 09:02	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			03/13/17 16:50	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.1	HF	0.1	0.1	SU			03/15/17 20:24	1
Temperature	23.6	HF	1.0	1.0	Degrees C			03/15/17 20:24	1

General Chemistry (Continued)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.56**	**J B**	3.0	0.25	mg/L			03/29/17 11:15	1
Fluoride	ND		0.50	0.060	mg/L			03/29/17 11:15	1
Sulfate	**0.60**	**J B**	5.0	0.23	mg/L			03/29/17 11:15	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/10/17 09:02	1
Total Suspended Solids	ND		4.0	1.1	mg/L			03/13/17 16:50	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.134**		0.0912	0.0920	1.00	0.126	pCi/L	03/13/17 09:17	04/04/17 05:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*03/13/17 09:17*	*04/04/17 05:59*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.137	U	0.0978	0.0985	1.00	0.140	pCi/L	03/13/17 09:17	04/04/17 05:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*03/13/17 09:17*	*04/04/17 05:59*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0779	U	0.0744	0.0748	1.00	0.114	pCi/L	03/13/17 09:17	04/04/17 05:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/13/17 09:17*	*04/04/17 05:59*	*1*

Client Sample ID: MW-8D — **Lab Sample ID: 280-94604-4**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.121**		0.0849	0.0856	1.00	0.118	pCi/L	03/13/17 09:17	04/04/17 05:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/13/17 09:17*	*04/04/17 05:59*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0369	U	0.0643	0.0644	1.00	0.114	pCi/L	03/13/17 09:17	04/04/17 05:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.1*		*40 - 110*	*03/13/17 09:17*	*04/04/17 05:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0856	U	0.262	0.262	1.00	0.452	pCi/L	03/13/17 09:42	03/28/17 14:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:41*	*1*
Y Carrier	*84.1*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:41*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.139	U	0.219	0.219	1.00	0.368	pCi/L	03/13/17 09:42	03/28/17 14:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:41*	*1*
Y Carrier	*87.5*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:41*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.130	U	0.244	0.244	1.00	0.413	pCi/L	03/13/17 09:42	03/28/17 14:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:42*	*1*
Y Carrier	*88.6*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:42*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8D — **Lab Sample ID: 280-94604-4**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.162	U	0.222	0.223	1.00	0.371	pCi/L	03/13/17 09:42	03/28/17 14:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:42*	*1*
Y Carrier	*89.0*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:42*	*1*

Client Sample ID: MW-8EB — **Lab Sample ID: 280-94604-5**
Date Collected: 03/07/17 14:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0622	U	0.215	0.215	1.00	0.396	pCi/L	03/13/17 09:42	03/28/17 14:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.1*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:42*	*1*
Y Carrier	*89.3*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:42*	*1*

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-94604-1**
Date Collected: 03/08/17 12:20 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.220	U	0.277	0.278	5.00	0.452	pCi/L		04/04/17 13:41	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-94604-2**
Date Collected: 03/08/17 10:55 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.276	U	0.240	0.240	5.00	0.368	pCi/L		04/04/17 13:41	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-94604-3**
Date Collected: 03/07/17 14:10 — **Matrix: Water**
Date Received: 03/09/17 07:39

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.208	U	0.255	0.255	5.00	0.413	pCi/L		04/04/17 13:41	1

Client Sample Results

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

TestAmerica Job ID: 280-94604-1

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

Client Sample ID: MW-8D
Date Collected: 03/07/17 14:10
Date Received: 03/09/17 07:39

Lab Sample ID: 280-94604-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.283	U	0.238	0.239	5.00	0.371	pCi/L		04/04/17 13:41	1

Client Sample ID: MW-8EB
Date Collected: 03/07/17 14:55
Date Received: 03/09/17 07:39

Lab Sample ID: 280-94604-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0253	U	0.225	0.225	5.00	0.396	pCi/L		04/04/17 13:41	1

QC Sample Results

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

TestAmerica Job ID: 280-94604-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-270479/1-A
Matrix: Water
Analysis Batch: 270730

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 270479

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.0134	J	0.20	0.0081	mg/L		03/14/17 14:00	03/15/17 15:45	1

Lab Sample ID: LCS 240-270479/2-A
Matrix: Water
Analysis Batch: 270730

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 270479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.976		mg/L		98	80 - 120

Lab Sample ID: MB 240-270651/1-A
Matrix: Water
Analysis Batch: 270927

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 270651

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		03/15/17 14:00	03/16/17 16:52	1

Lab Sample ID: LCS 240-270651/2-A
Matrix: Water
Analysis Batch: 270927

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 270651

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.03		mg/L		103	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-270479/1-A
Matrix: Water
Analysis Batch: 270801

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 270479

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/14/17 14:00	03/15/17 15:04	1
Arsenic	0.000381	J	0.0050	0.00035	mg/L		03/14/17 14:00	03/15/17 15:04	1
Barium	0.000994	J	0.0050	0.00052	mg/L		03/14/17 14:00	03/15/17 15:04	1
Beryllium	ND		0.0010	0.00040	mg/L		03/14/17 14:00	03/15/17 15:04	1
Calcium	0.197	J	1.0	0.043	mg/L		03/14/17 14:00	03/15/17 15:04	1
Cadmium	ND		0.0010	0.00031	mg/L		03/14/17 14:00	03/15/17 15:04	1
Cobalt	ND		0.0010	0.00013	mg/L		03/14/17 14:00	03/15/17 15:04	1
Chromium	0.000344	J	0.0020	0.00026	mg/L		03/14/17 14:00	03/15/17 15:04	1
Molybdenum	ND		0.010	0.00051	mg/L		03/14/17 14:00	03/15/17 15:04	1
Lead	0.000188	J	0.0010	0.00016	mg/L		03/14/17 14:00	03/15/17 15:04	1
Selenium	ND		0.0050	0.00048	mg/L		03/14/17 14:00	03/15/17 15:04	1
Thallium	ND		0.0010	0.00028	mg/L		03/14/17 14:00	03/15/17 15:04	1
Lithium	0.000254	J	0.0080	0.00016	mg/L		03/14/17 14:00	03/15/17 15:04	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-270479/27-A
Matrix: Water
Analysis Batch: 270801

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 270479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0954		mg/L		95	80 - 120
Arsenic	1.00	0.945		mg/L		94	80 - 120
Barium	1.00	0.933		mg/L		93	80 - 120
Beryllium	1.00	0.950		mg/L		95	80 - 120
Calcium	10.0	8.89		mg/L		89	80 - 120
Cadmium	1.00	1.00		mg/L		100	80 - 120
Cobalt	1.00	0.941		mg/L		94	80 - 120
Chromium	1.00	0.945		mg/L		95	80 - 120
Molybdenum	0.100	0.0926		mg/L		93	80 - 120
Lead	1.00	0.958		mg/L		96	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.250		mg/L		100	80 - 120
Lithium	0.100	0.0958		mg/L		96	80 - 120

Lab Sample ID: MB 240-270651/1-A
Matrix: Water
Analysis Batch: 270964

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 270651

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/15/17 14:00	03/16/17 13:38	1
Arsenic	ND		0.0050	0.00035	mg/L		03/15/17 14:00	03/16/17 13:38	1
Barium	0.000751	J	0.0050	0.00052	mg/L		03/15/17 14:00	03/16/17 13:38	1
Beryllium	ND		0.0010	0.00040	mg/L		03/15/17 14:00	03/16/17 13:38	1
Calcium	0.168	J	1.0	0.043	mg/L		03/15/17 14:00	03/16/17 13:38	1
Cadmium	ND		0.0010	0.00031	mg/L		03/15/17 14:00	03/16/17 13:38	1
Cobalt	ND		0.0010	0.00013	mg/L		03/15/17 14:00	03/16/17 13:38	1
Chromium	ND		0.0020	0.00026	mg/L		03/15/17 14:00	03/16/17 13:38	1
Molybdenum	ND		0.010	0.00051	mg/L		03/15/17 14:00	03/16/17 13:38	1
Lead	ND		0.0010	0.00016	mg/L		03/15/17 14:00	03/16/17 13:38	1
Selenium	ND		0.0050	0.00048	mg/L		03/15/17 14:00	03/16/17 13:38	1
Thallium	ND		0.0010	0.00028	mg/L		03/15/17 14:00	03/16/17 13:38	1
Lithium	0.000355	J	0.0080	0.00016	mg/L		03/15/17 14:00	03/16/17 13:38	1

Lab Sample ID: LCS 240-270651/3-A
Matrix: Water
Analysis Batch: 270964

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 270651

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0967		mg/L		97	80 - 120
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.06		mg/L		106	80 - 120
Beryllium	1.00	1.17		mg/L		117	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120
Cadmium	1.00	1.05		mg/L		105	80 - 120
Cobalt	1.00	0.992		mg/L		99	80 - 120
Chromium	1.00	0.944		mg/L		94	80 - 120
Molybdenum	0.100	0.0957		mg/L		96	80 - 120
Lead	1.00	0.964		mg/L		96	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-270651/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 270964 — **Prep Batch: 270651**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	1.00	1.04		mg/L		104	80 - 120
Thallium	0.250	0.239		mg/L		96	80 - 120
Lithium	0.100	0.103		mg/L		103	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-366252/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 366864 — **Prep Batch: 366252**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/24/17 11:15	03/24/17 17:54	1

Lab Sample ID: LCS 280-366252/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 366864 — **Prep Batch: 366252**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00454		mg/L		91	84 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-365109/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365109

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 280-365701/54 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365701

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 280-367052/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367052

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			03/28/17 10:23	1
Fluoride	ND		0.50	0.060	mg/L			03/28/17 10:23	1
Sulfate	ND		5.0	0.23	mg/L			03/28/17 10:23	1

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

Lab Sample ID: LCS 280-367052/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.2		mg/L		99	90 - 110
Fluoride	5.00	5.06		mg/L		101	90 - 110
Sulfate	100	98.7		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-367052/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367052

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	5.09		mg/L		102	90 - 110	1	10
Sulfate	100	98.7		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-367052/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367052

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.53	J	mg/L		101	50 - 150
Fluoride	0.200	0.158	J	mg/L		79	50 - 150
Sulfate	2.50	2.54	J	mg/L		102	50 - 150

Lab Sample ID: MB 280-367232/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367232

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.640	J	3.0	0.25	mg/L			03/29/17 10:43	1
Fluoride	ND		0.50	0.060	mg/L			03/29/17 10:43	1
Sulfate	0.404	J	5.0	0.23	mg/L			03/29/17 10:43	1

Lab Sample ID: LCS 280-367232/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367232

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	94.3		mg/L		94	90 - 110
Fluoride	5.00	4.82		mg/L		96	90 - 110
Sulfate	100	96.5		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-367232/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367232

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	94.5		mg/L		94	90 - 110	0	10
Fluoride	5.00	4.84		mg/L		97	90 - 110	0	10
Sulfate	100	96.5		mg/L		96	90 - 110	0	10

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

Lab Sample ID: MRL 280-367232/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 367232

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.27	J	mg/L		91	50 - 150
Fluoride	0.200	0.206	J	mg/L		103	50 - 150
Sulfate	2.50	2.34	J	mg/L		94	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-365059/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365059

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/10/17 09:02	1

Lab Sample ID: LCS 280-365059/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365059

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	486		mg/L		97	86 - 110

Lab Sample ID: LCSD 280-365059/3 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365059

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	500	487		mg/L		97	86 - 110	0	20

Lab Sample ID: 280-94604-1 DU — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365059

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4500		4530		mg/L		0.9	10

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

Lab Sample ID: MB 280-365299/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365299

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			03/13/17 16:50	1

Lab Sample ID: LCS 280-365299/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 365299

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	94.8		mg/L		95	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-297331/1-A
Matrix: Water
Analysis Batch: 301212

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297331

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.006578	U	0.0634	0.0634	1.00	0.129	pCi/L	03/13/17 09:17	04/04/17 05:47	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*03/13/17 09:17*	*04/04/17 05:47*	*1*

Lab Sample ID: LCS 160-297331/2-A
Matrix: Water
Analysis Batch: 301212

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297331

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	11.08		1.15	1.00	0.106	pCi/L	98	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.1*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-297337/1-A
Matrix: Water
Analysis Batch: 300182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297337

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.1761	U	0.220	0.220	1.00	0.419	pCi/L	03/13/17 09:42	03/28/17 14:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.5*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:36*	*1*
Y Carrier	*86.0*		*40 - 110*	*03/13/17 09:42*	*03/28/17 14:36*	*1*

Lab Sample ID: LCS 160-297337/2-A
Matrix: Water
Analysis Batch: 300182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297337

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			13.7	15.32		1.64	1.00	0.429	pCi/L	112	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*97.1*		*40 - 110*
Y Carrier	*83.7*		*40 - 110*

QC Association Summary

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

TestAmerica Job ID: 280-94604-1

Metals

Prep Batch: 270479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total Recoverable	Water	3005A	
280-94604-2	MW-7	Total Recoverable	Water	3005A	
280-94604-4	MW-8D	Total Recoverable	Water	3005A	
280-94604-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-270479/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-270479/27-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-270479/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 270651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-3	MW-8	Total Recoverable	Water	3005A	
MB 240-270651/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-270651/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-270651/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 270730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total Recoverable	Water	6010C	270479
280-94604-2	MW-7	Total Recoverable	Water	6010C	270479
280-94604-4	MW-8D	Total Recoverable	Water	6010C	270479
280-94604-5	MW-8EB	Total Recoverable	Water	6010C	270479
MB 240-270479/1-A	Method Blank	Total Recoverable	Water	6010C	270479
LCS 240-270479/2-A	Lab Control Sample	Total Recoverable	Water	6010C	270479

Analysis Batch: 270801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total Recoverable	Water	6020A	270479
280-94604-2	MW-7	Total Recoverable	Water	6020A	270479
280-94604-4	MW-8D	Total Recoverable	Water	6020A	270479
280-94604-5	MW-8EB	Total Recoverable	Water	6020A	270479
MB 240-270479/1-A	Method Blank	Total Recoverable	Water	6020A	270479
LCS 240-270479/27-A	Lab Control Sample	Total Recoverable	Water	6020A	270479

Analysis Batch: 270927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-3	MW-8	Total Recoverable	Water	6010C	270651
MB 240-270651/1-A	Method Blank	Total Recoverable	Water	6010C	270651
LCS 240-270651/2-A	Lab Control Sample	Total Recoverable	Water	6010C	270651

Analysis Batch: 270964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-3	MW-8	Total Recoverable	Water	6020A	270651
MB 240-270651/1-A	Method Blank	Total Recoverable	Water	6020A	270651
LCS 240-270651/3-A	Lab Control Sample	Total Recoverable	Water	6020A	270651

Prep Batch: 366252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	7470A	
280-94604-2	MW-7	Total/NA	Water	7470A	
280-94604-3	MW-8	Total/NA	Water	7470A	
280-94604-4	MW-8D	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 366252 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-5	MW-8EB	Total/NA	Water	7470A	
MB 280-366252/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-366252/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 366864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	7470A	366252
280-94604-2	MW-7	Total/NA	Water	7470A	366252
280-94604-3	MW-8	Total/NA	Water	7470A	366252
280-94604-4	MW-8D	Total/NA	Water	7470A	366252
280-94604-5	MW-8EB	Total/NA	Water	7470A	366252
MB 280-366252/1-A	Method Blank	Total/NA	Water	7470A	366252
LCS 280-366252/2-A	Lab Control Sample	Total/NA	Water	7470A	366252

General Chemistry

Analysis Batch: 365059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	SM 2540C	
280-94604-2	MW-7	Total/NA	Water	SM 2540C	
280-94604-3	MW-8	Total/NA	Water	SM 2540C	
280-94604-4	MW-8D	Total/NA	Water	SM 2540C	
280-94604-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-365059/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-365059/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-365059/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-94604-1 DU	MW-6	Total/NA	Water	SM 2540C	

Analysis Batch: 365109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	9040B	
280-94604-2	MW-7	Total/NA	Water	9040B	
280-94604-3	MW-8	Total/NA	Water	9040B	
280-94604-4	MW-8D	Total/NA	Water	9040B	
LCS 280-365109/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 365299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	SM 2540D	
280-94604-2	MW-7	Total/NA	Water	SM 2540D	
280-94604-3	MW-8	Total/NA	Water	SM 2540D	
280-94604-4	MW-8D	Total/NA	Water	SM 2540D	
280-94604-5	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-365299/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-365299/1	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 365701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-365701/54	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 367052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	9056A	
280-94604-1	MW-6	Total/NA	Water	9056A	
280-94604-2	MW-7	Total/NA	Water	9056A	
280-94604-2	MW-7	Total/NA	Water	9056A	
280-94604-3	MW-8	Total/NA	Water	9056A	
280-94604-3	MW-8	Total/NA	Water	9056A	
280-94604-4	MW-8D	Total/NA	Water	9056A	
280-94604-4	MW-8D	Total/NA	Water	9056A	
MB 280-367052/6	Method Blank	Total/NA	Water	9056A	
LCS 280-367052/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-367052/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-367052/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 367232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-5	MW-8EB	Total/NA	Water	9056A	
MB 280-367232/6	Method Blank	Total/NA	Water	9056A	
LCS 280-367232/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-367232/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-367232/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 297331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	PrecSep-21	
280-94604-2	MW-7	Total/NA	Water	PrecSep-21	
280-94604-3	MW-8	Total/NA	Water	PrecSep-21	
280-94604-4	MW-8D	Total/NA	Water	PrecSep-21	
280-94604-5	MW-8EB	Total/NA	Water	PrecSep-21	
MB 160-297331/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-297331/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 297337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94604-1	MW-6	Total/NA	Water	PrecSep_0	
280-94604-2	MW-7	Total/NA	Water	PrecSep_0	
280-94604-3	MW-8	Total/NA	Water	PrecSep_0	
280-94604-4	MW-8D	Total/NA	Water	PrecSep_0	
280-94604-5	MW-8EB	Total/NA	Water	PrecSep_0	
MB 160-297337/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-297337/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-94604-1

Client Sample ID: MW-6

Lab Sample ID: 280-94604-1
Date Collected: 03/08/17 12:20
Matrix: Water
Date Received: 03/09/17 07:39

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	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			270730	03/15/17 15:50	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			270801	03/15/17 15:41	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	366252	03/24/17 11:15	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366864	03/24/17 19:06	CDH	TAL DEN
Total/NA	Analysis	9040B		1			365109	03/10/17 13:52	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	367052	03/28/17 22:50	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	367052	03/28/17 23:08	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	365059	03/10/17 09:02	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	365299	03/13/17 16:50	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.24 mL	1.0 g	297331	03/13/17 09:17	MBC	TAL SL
Total/NA	Analysis	9315		1			301213	04/04/17 05:59	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.24 mL	1.0 g	297337	03/13/17 09:42	MBC	TAL SL
Total/NA	Analysis	9320		1			300406	03/28/17 14:41	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			301508	04/04/17 13:41	RTM	TAL SL

Client Sample ID: MW-7

Lab Sample ID: 280-94604-2
Date Collected: 03/08/17 10:55
Matrix: Water
Date Received: 03/09/17 07:39

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	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			270730	03/15/17 15:55	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			270801	03/15/17 15:46	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	366252	03/24/17 11:15	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366864	03/24/17 19:09	CDH	TAL DEN
Total/NA	Analysis	9040B		1			365109	03/10/17 13:55	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	367052	03/28/17 23:26	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	367052	03/28/17 23:44	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	365059	03/10/17 09:02	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	365299	03/13/17 16:50	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.35 mL	1.0 g	297331	03/13/17 09:17	MBC	TAL SL
Total/NA	Analysis	9315		1			301213	04/04/17 05:59	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.35 mL	1.0 g	297337	03/13/17 09:42	MBC	TAL SL
Total/NA	Analysis	9320		1			300406	03/28/17 14:41	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			301508	04/04/17 13:41	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-94604-1

Client Sample ID: MW-8

Lab Sample ID: 280-94604-3
Date Collected: 03/07/17 14:10
Matrix: Water
Date Received: 03/09/17 07:39

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	270651	03/15/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			270927	03/16/17 18:29	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	270651	03/15/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			270964	03/16/17 15:01	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	366252	03/24/17 11:15	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366864	03/24/17 19:11	CDH	TAL DEN
Total/NA	Analysis	9040B		1			365109	03/10/17 14:00	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	367052	03/29/17 06:58	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	367052	03/29/17 07:17	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	365059	03/10/17 09:02	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	365299	03/13/17 16:50	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.43 mL	1.0 g	297331	03/13/17 09:17	MBC	TAL SL
Total/NA	Analysis	9315		1			301213	04/04/17 05:59	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.43 mL	1.0 g	297337	03/13/17 09:42	MBC	TAL SL
Total/NA	Analysis	9320		1			300406	03/28/17 14:42	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			301508	04/04/17 13:41	RTM	TAL SL

Client Sample ID: MW-8D

Lab Sample ID: 280-94604-4
Date Collected: 03/07/17 14:10
Matrix: Water
Date Received: 03/09/17 07:39

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	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			270730	03/15/17 14:57	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			270801	03/15/17 15:50	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	366252	03/24/17 11:15	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366864	03/24/17 19:13	CDH	TAL DEN
Total/NA	Analysis	9040B		1			365109	03/10/17 14:05	CCJ	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	367052	03/29/17 07:35	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	367052	03/29/17 07:52	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	365059	03/10/17 09:02	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	365299	03/13/17 16:50	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	297331	03/13/17 09:17	MBC	TAL SL
Total/NA	Analysis	9315		1			301213	04/04/17 05:59	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	297337	03/13/17 09:42	MBC	TAL SL
Total/NA	Analysis	9320		1			300406	03/28/17 14:42	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			301508	04/04/17 13:41	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-94604-1

Client Sample ID: MW-8EB

Date Collected: 03/07/17 14:55
Date Received: 03/09/17 07:39

Lab Sample ID: 280-94604-5

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	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			270730	03/15/17 15:02	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	270479	03/14/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			270801	03/15/17 15:54	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	366252	03/24/17 11:15	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366864	03/24/17 19:15	CDH	TAL DEN
Total/NA	Analysis	9040B		1			365701	03/15/17 20:24	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	367232	03/29/17 11:15	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	365059	03/10/17 09:02	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	365299	03/13/17 16:50	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.18 mL	1.0 g	297331	03/13/17 09:17	MBC	TAL SL
Total/NA	Analysis	9315		1			301213	04/04/17 05:59	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.18 mL	1.0 g	297337	03/13/17 09:42	MBC	TAL SL
Total/NA	Analysis	9320		1			300406	03/28/17 14:42	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			301508	04/04/17 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
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

TestAmerica Job ID: 280-94604-1

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	10-31-17

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
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	04-30-17 *
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	03-31-17 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

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	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17

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

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	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* 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	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:			
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 - Hayden	Project #: 28014377			
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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~ TL				~~Water~~		N							
MW-6	3.8.17	1220	G	Water		N	✓	✓	✓	✓	✓		
MW-7	3.8.17	1055	G	Water		N	✓	✓	✓	✓	✓		
MW-8	3-7-17	1410	G	Water		N	✓	✓	✓	✓	✓		
~~Field Duplicate~~ MW-8D	3.7.17	1410	G	Water		N	✓	✓	✓	✓	✓		
~~Equipment Blank~~ MW-8 EB	3.7.17	1455	G	Water		N	✓	✓	✓	✓	✓		

280-94604 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: Tara Kent	Date: 9MAR2017	Time: 0739	Method of Shipment:		
Relinquished by: Tara Kent	Date/Time: 3-9-17 0739	Company: HDR	Received by: [illegible]	Date/Time: 3-9-17 0739	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: 1.9, 1.3, 1.2 IR#700 RP 3-9-17

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

Chain of Custody Record

280-94604 Chain of Custody

stAmerica
LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Sampler:	
Lab PM:	Rothmeyer, Stephanie K
Phone:	
E-Mail:	stephanie.rothmeyer@testamericainc.com
State of Origin:	Colorado
Page:	Page 1 of 1
Client Contact:	Shipping/Receiving
Company:	TestAmerica Laboratories, Inc.
Accreditations Required (See note):	DoD ELAP - A2LA
Job #:	280-94604-1
Address:	13715 Rider Trail North,
Due Date Requested:	4/6/2017
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 - Hayden
Project #:	28014377
Site:	Xcel Energy CCR - Hayden 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)	Ra226Ra228_GFPC/ Combined Radium-226 and Radium-228	9315_Ra226/PrecSep_21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-94604-1)	3/8/17	12:20 Mountain		Water			X	X	X	2	
MW-7 (280-94604-2)	3/8/17	10:55 Mountain		Water			X	X	X	2	
MW-8 (280-94604-3)	3/7/17	14:10 Mountain		Water			X	X	X	2	
MW-8D (280-94604-4)	3/7/17	14:10 Mountain		Water			X	X	X	2	
MW-8EB (280-94604-5)	3/7/17	14:55 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
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
[illegible]	03/9/17 1605	TAD	[illegible]	3/10/17 0800	

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

10.6/10.3

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: 280-390150.1
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 #: 280-94604-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/3/2017			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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:

S27

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-6 (280-94604-1)	3/8/17	12:20 Mountain		Water			X	X	1	, Use Collision Cell
MW-7 (280-94604-2)	3/8/17	10:55 Mountain		Water			X	X	1	Use Collision Cell
MW-8 (280-94604-3)	3/7/17	14:10 Mountain		Water			X	X	1	, Use Collision Cell
MW-8D (280-94604-4)	3/7/17	14:10 Mountain		Water			X	X	1	Use Collision Cell
MW-8EB (280-94604-5)	3/7/17	14:55 Mountain		Water			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:	Company	Received by:	Date/Time:	Company
[signature]	3/9/17 1710	TAD	[signature]	3-10-17 1110	TA

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

4/4/2017

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

Client Denver Site Name_____ Cooler unpacked by:

Cooler Received on 3-10-17 Opened on 3-10-17

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

TestAmerica Cooler # _____ 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 **-0.3** °C) Observed Cooler Temp. 10.6 °C Corrected Cooler Temp. 10.3 °C
   IR GUN #36 (CF **+0.3**°C) Observed Cooler Temp._____ °C Corrected Cooler Temp._____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC682547**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. 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)

16. 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: 280-94604-1

Login Number: 94604
List Number: 1
Creator: Pottruff, Reed W

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").	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: 280-94604-1

Login Number: 94604
List Number: 3
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 03/10/17 03:31 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	19
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 - Hayden

TestAmerica Job ID: 280-94604-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)							
280-94604-1	MW-6	92.6							
280-94604-2	MW-7	99.1							
280-94604-3	MW-8	102							
280-94604-4	MW-8D	102							
280-94604-5	MW-8EB	94.1							
LCS 160-297331/2-A	Lab Control Sample	97.1							
MB 160-297331/1-A	Method Blank	96.5							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
280-94604-1	MW-6	92.6	84.1						
280-94604-2	MW-7	99.1	87.5						
280-94604-3	MW-8	102	88.6						
280-94604-4	MW-8D	102	89.0						
280-94604-5	MW-8EB	94.1	89.3						
LCS 160-297337/2-A	Lab Control Sample	97.1	83.7						
MB 160-297337/1-A	Method Blank	96.5	86.0						

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-97201-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Authorized for release by:
6/15/2017 2:13:23 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 - Hayden

TestAmerica Job ID: 280-97201-1

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.

Rad

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
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: 280-97201-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-97201-1

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 5/16/2017 at 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.0º C and 5.8º C.

TOTAL RECOVERABLE METALS
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/19/2017 and analyzed on 05/23/2017.

Samples MW-6 (280-97201-1)[5X] and MW-7 (280-97201-2)[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 RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/19/2017 and analyzed on 05/24/2017.

Calcium failed the recovery criteria low for the MS and MSD of sample 240-79713-6 in batch 240-280377. 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-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 05/31/2017.

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

TOTAL DISSOLVED SOLIDS
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 05/22/2017.

Job ID: 280-97201-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 05/19/2017.

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

CORROSIVITY (PH)
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 05/18/2017, 05/24/2017 and 06/09/2017.

The samples in pH batch 280-374294 are not associated with a duplicate sample due to the duplicate sample failing to reaching constant pH. The parent sample reached constant pH.

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

ANIONS (28 DAYS)
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 06/09/2017 and 06/10/2017.

Chloride and Sulfate were detected in method blank MB 280-376685/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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 was detected in method blank MB 280-376811/6 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 low for the MS and MSD of sample 280-98101-1 in batch 280-376685. Refer to the QC report for details.

Chloride and Sulfate exceeded the RPD limit for the duplicate of sample 280-98101-1. Sample matrix interference and/or non-homogeneity are suspected.

Samples MW-6 (280-97201-1)[50X], MW-7 (280-97201-2)[50X], MW-8 (280-97201-3)[50X] and MW-8D (280-97201-4)[50X] 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-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 05/22/2017 and analyzed on 06/14/2017.

Insufficient sample volume was available to perform a sample duplicate (DU) for the following samples: MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4), MW-8EB (280-97201-5).

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

RADIUM-228
Samples MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 05/22/2017 and 06/09/2017 and analyzed on

Job ID: 280-97201-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

06/05/2017 and 06/14/2017.

Radium-228 failed the recovery criteria high for LCSD 160-309815/3-A. This analyte was not observed above the requested limit in the associated samples; therefore, the sample data was not adversely affected by this excursion. The data have been qualified and reported.

Insufficient sample volume was available to perform a sample duplicate (DU) for the following samples: MW-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4), MW-8EB (280-97201-5).

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-6 (280-97201-1), MW-7 (280-97201-2), MW-8 (280-97201-3), MW-8D (280-97201-4) and MW-8EB (280-97201-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 06/15/2017.

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 - Hayden

TestAmerica Job ID: 280-97201-1

Client Sample ID: MW-6 — Lab Sample ID: 280-97201-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	44		1.0	0.041	mg/L	5		6010C	Total Recoverable
Arsenic	0.0024	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0065		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00023	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.3		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.13		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.4	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	67	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.38	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	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-7 — Lab Sample ID: 280-97201-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	50		1.0	0.041	mg/L	5		6010C	Total Recoverable
Arsenic	0.0019	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0057		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
Molybdenum	1.0		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.010		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.29		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	130	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.20	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3200	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4900		40	19	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-8 — Lab Sample ID: 280-97201-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.20	0.0081	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-97201-1

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 280-97201-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0048	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0061		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	450		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00019	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0046	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.040		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.74		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	23.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	210	B	150	13	mg/L	50		9056A	Total/NA
Fluoride	0.18	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	4900	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	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-8D — Lab Sample ID: 280-97201-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0048	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0057		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	440		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00021	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0014	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.040		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.69		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	23.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	210	B	150	13	mg/L	50		9056A	Total/NA
Fluoride	0.17	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	5000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8300		100	47	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-8EB — Lab Sample ID: 280-97201-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.031	J	0.20	0.0081	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-97201-1

Client Sample ID: MW-8EB (Continued)

Lab Sample ID: 280-97201-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Fluoride	0.070	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	0.81	J B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	11		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 - Hayden

TestAmerica Job ID: 280-97201-1

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

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 - Hayden

TestAmerica Job ID: 280-97201-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-97201-1	MW-6	Water	05/16/17 11:05	05/16/17 16:15
280-97201-2	MW-7	Water	05/16/17 09:45	05/16/17 16:15
280-97201-3	MW-8	Water	05/15/17 13:15	05/16/17 16:15
280-97201-4	MW-8D	Water	05/15/17 13:15	05/16/17 16:15
280-97201-5	MW-8EB	Water	05/15/17 14:00	05/16/17 16:15

Client Sample Results

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

TestAmerica Job ID: 280-97201-1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	44		1.0	0.041	mg/L		05/19/17 14:00	05/23/17 17:32	5

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	50		1.0	0.041	mg/L		05/19/17 14:00	05/23/17 17:36	5

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.20	0.0081	mg/L		05/19/17 14:00	05/23/17 17:41	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-97201-4**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.20	0.0081	mg/L		05/19/17 14:00	05/23/17 17:46	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.031	J	0.20	0.0081	mg/L		05/19/17 14:00	05/23/17 17:50	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/19/17 14:00	05/24/17 19:44	1
Arsenic	0.0024	J	0.0050	0.00075	mg/L		05/19/17 14:00	05/24/17 19:44	1
Barium	0.0065		0.0050	0.0022	mg/L		05/19/17 14:00	05/24/17 19:44	1
Beryllium	ND		0.0010	0.00031	mg/L		05/19/17 14:00	05/24/17 19:44	1
Calcium	430		1.0	0.58	mg/L		05/19/17 14:00	05/24/17 19:44	1
Cadmium	0.00023	J	0.0010	0.00021	mg/L		05/19/17 14:00	05/24/17 19:44	1
Cobalt	ND		0.0010	0.00019	mg/L		05/19/17 14:00	05/24/17 19:44	1
Chromium	ND		0.0020	0.00098	mg/L		05/19/17 14:00	05/24/17 19:44	1
Molybdenum	1.3		0.010	0.0011	mg/L		05/19/17 14:00	05/24/17 19:44	1
Lead	ND		0.0010	0.00045	mg/L		05/19/17 14:00	05/24/17 19:44	1
Selenium	0.015		0.0050	0.00089	mg/L		05/19/17 14:00	05/24/17 19:44	1
Thallium	ND		0.0010	0.00020	mg/L		05/19/17 14:00	05/24/17 19:44	1
Lithium	0.13		0.0080	0.0017	mg/L		05/19/17 14:00	05/24/17 19:44	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/19/17 14:00	05/24/17 19:49	1

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

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0019	J	0.0050	0.00075	mg/L		05/19/17 14:00	05/24/17 19:49	1
Barium	0.0057		0.0050	0.0022	mg/L		05/19/17 14:00	05/24/17 19:49	1
Beryllium	ND		0.0010	0.00031	mg/L		05/19/17 14:00	05/24/17 19:49	1
Calcium	430		1.0	0.58	mg/L		05/19/17 14:00	05/24/17 19:49	1
Cadmium	ND		0.0010	0.00021	mg/L		05/19/17 14:00	05/24/17 19:49	1
Cobalt	ND		0.0010	0.00019	mg/L		05/19/17 14:00	05/24/17 19:49	1
Chromium	ND		0.0020	0.00098	mg/L		05/19/17 14:00	05/24/17 19:49	1
Molybdenum	1.0		0.010	0.0011	mg/L		05/19/17 14:00	05/24/17 19:49	1
Lead	ND		0.0010	0.00045	mg/L		05/19/17 14:00	05/24/17 19:49	1
Selenium	0.010		0.0050	0.00089	mg/L		05/19/17 14:00	05/24/17 19:49	1
Thallium	ND		0.0010	0.00020	mg/L		05/19/17 14:00	05/24/17 19:49	1
Lithium	0.29		0.0080	0.0017	mg/L		05/19/17 14:00	05/24/17 19:49	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/19/17 14:00	05/24/17 19:53	1
Arsenic	0.0048	J	0.0050	0.00075	mg/L		05/19/17 14:00	05/24/17 19:53	1
Barium	0.0061		0.0050	0.0022	mg/L		05/19/17 14:00	05/24/17 19:53	1
Beryllium	ND		0.0010	0.00031	mg/L		05/19/17 14:00	05/24/17 19:53	1
Calcium	450		1.0	0.58	mg/L		05/19/17 14:00	05/24/17 19:53	1
Cadmium	ND		0.0010	0.00021	mg/L		05/19/17 14:00	05/24/17 19:53	1
Cobalt	0.00019	J	0.0010	0.00019	mg/L		05/19/17 14:00	05/24/17 19:53	1
Chromium	ND		0.0020	0.00098	mg/L		05/19/17 14:00	05/24/17 19:53	1
Molybdenum	0.0046	J	0.010	0.0011	mg/L		05/19/17 14:00	05/24/17 19:53	1
Lead	ND		0.0010	0.00045	mg/L		05/19/17 14:00	05/24/17 19:53	1
Selenium	0.040		0.0050	0.00089	mg/L		05/19/17 14:00	05/24/17 19:53	1
Thallium	ND		0.0010	0.00020	mg/L		05/19/17 14:00	05/24/17 19:53	1
Lithium	0.74		0.0080	0.0017	mg/L		05/19/17 14:00	05/24/17 19:53	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-97201-4**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/19/17 14:00	05/24/17 19:57	1
Arsenic	0.0048	J	0.0050	0.00075	mg/L		05/19/17 14:00	05/24/17 19:57	1
Barium	0.0057		0.0050	0.0022	mg/L		05/19/17 14:00	05/24/17 19:57	1
Beryllium	ND		0.0010	0.00031	mg/L		05/19/17 14:00	05/24/17 19:57	1
Calcium	440		1.0	0.58	mg/L		05/19/17 14:00	05/24/17 19:57	1
Cadmium	ND		0.0010	0.00021	mg/L		05/19/17 14:00	05/24/17 19:57	1
Cobalt	0.00021	J	0.0010	0.00019	mg/L		05/19/17 14:00	05/24/17 19:57	1
Chromium	ND		0.0020	0.00098	mg/L		05/19/17 14:00	05/24/17 19:57	1
Molybdenum	0.0014	J	0.010	0.0011	mg/L		05/19/17 14:00	05/24/17 19:57	1
Lead	ND		0.0010	0.00045	mg/L		05/19/17 14:00	05/24/17 19:57	1
Selenium	0.040		0.0050	0.00089	mg/L		05/19/17 14:00	05/24/17 19:57	1
Thallium	ND		0.0010	0.00020	mg/L		05/19/17 14:00	05/24/17 19:57	1
Lithium	0.69		0.0080	0.0017	mg/L		05/19/17 14:00	05/24/17 19:57	1

Client Sample Results

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

TestAmerica Job ID: 280-97201-1

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

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/19/17 14:00	05/24/17 20:01	1
Arsenic	ND		0.0050	0.00075	mg/L		05/19/17 14:00	05/24/17 20:01	1
Barium	ND		0.0050	0.0022	mg/L		05/19/17 14:00	05/24/17 20:01	1
Beryllium	ND		0.0010	0.00031	mg/L		05/19/17 14:00	05/24/17 20:01	1
Calcium	ND		1.0	0.58	mg/L		05/19/17 14:00	05/24/17 20:01	1
Cadmium	ND		0.0010	0.00021	mg/L		05/19/17 14:00	05/24/17 20:01	1
Cobalt	ND		0.0010	0.00019	mg/L		05/19/17 14:00	05/24/17 20:01	1
Chromium	ND		0.0020	0.00098	mg/L		05/19/17 14:00	05/24/17 20:01	1
Molybdenum	ND		0.010	0.0011	mg/L		05/19/17 14:00	05/24/17 20:01	1
Lead	ND		0.0010	0.00045	mg/L		05/19/17 14:00	05/24/17 20:01	1
Selenium	ND		0.0050	0.00089	mg/L		05/19/17 14:00	05/24/17 20:01	1
Thallium	ND		0.0010	0.00020	mg/L		05/19/17 14:00	05/24/17 20:01	1
Lithium	ND		0.0080	0.0017	mg/L		05/19/17 14:00	05/24/17 20:01	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 17:12	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 17:19	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 17:25	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-97201-4**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 17:27	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 17:30	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.4	HF	0.1	0.1	SU			05/18/17 14:24	1
Temperature	22.2	HF	1.0	1.0	Degrees C			05/18/17 14:24	1
Chloride	67	B	3.0	0.25	mg/L			06/09/17 12:03	1
Fluoride	0.38	J	0.50	0.060	mg/L			06/09/17 12:03	1
Sulfate	3000	B	250	12	mg/L			06/10/17 00:39	50
Total Dissolved Solids (TDS)	4500		40	19	mg/L			05/22/17 08:29	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			05/19/17 16:26	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			05/18/17 14:27	1
Temperature	22.1	HF	1.0	1.0	Degrees C			05/18/17 14:27	1
Chloride	130	B	3.0	0.25	mg/L			06/09/17 12:21	1
Fluoride	0.20	J	0.50	0.060	mg/L			06/09/17 12:21	1
Sulfate	3200	B	250	12	mg/L			06/10/17 00:57	50
Total Dissolved Solids (TDS)	4900		40	19	mg/L			05/22/17 08:29	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			05/19/17 16:26	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

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			05/24/17 17:50	1
Temperature	23.9	HF	1.0	1.0	Degrees C			05/24/17 17:50	1
Chloride	210	B	150	13	mg/L			06/10/17 01:15	50
Fluoride	0.18	J	0.50	0.060	mg/L			06/09/17 12:38	1
Sulfate	4900	B	250	12	mg/L			06/10/17 01:15	50
Total Dissolved Solids (TDS)	8200		100	47	mg/L			05/22/17 08:29	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			05/19/17 16:26	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-97201-4**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

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			05/24/17 17:45	1
Temperature	23.8	HF	1.0	1.0	Degrees C			05/24/17 17:45	1
Chloride	210	B	150	13	mg/L			06/10/17 01:32	50
Fluoride	0.17	J	0.50	0.060	mg/L			06/09/17 12:56	1
Sulfate	5000	B	250	12	mg/L			06/10/17 01:32	50
Total Dissolved Solids (TDS)	8300		100	47	mg/L			05/22/17 08:29	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			05/19/17 16:26	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

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			06/09/17 17:59	1
Temperature	23.5	HF	1.0	1.0	Degrees C			06/09/17 17:59	1

General Chemistry (Continued)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			06/10/17 11:59	1
Fluoride	**0.070**	**J**	0.50	0.060	mg/L			06/10/17 11:59	1
Sulfate	**0.81**	**J B**	5.0	0.23	mg/L			06/10/17 11:59	1
Total Dissolved Solids (TDS)	**11**		10	4.7	mg/L			05/22/17 08:29	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/19/17 16:26	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0605	U	0.0528	0.0531	1.00	0.0749	pCi/L	05/22/17 10:39	06/14/17 06:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*05/22/17 10:39*	*06/14/17 06:29*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0574	U	0.0476	0.0479	1.00	0.0629	pCi/L	05/22/17 10:39	06/14/17 06:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.0*		*40 - 110*	*05/22/17 10:39*	*06/14/17 06:29*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.0830**		0.0597	0.0602	1.00	0.0793	pCi/L	05/22/17 10:39	06/14/17 06:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.2*		*40 - 110*	*05/22/17 10:39*	*06/14/17 06:29*	*1*

Client Sample ID: MW-8D — **Lab Sample ID: 280-97201-4**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.132**		0.0677	0.0687	1.00	0.0699	pCi/L	05/22/17 10:39	06/14/17 06:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.3*		*40 - 110*	*05/22/17 10:39*	*06/14/17 06:30*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00860	U	0.0265	0.0265	1.00	0.0722	pCi/L	05/22/17 10:39	06/14/17 06:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*05/22/17 10:39*	*06/14/17 06:30*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0385	U *	0.208	0.208	1.00	0.369	pCi/L	05/22/17 12:30	06/05/17 11:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:08*	*1*
Y Carrier	*80.4*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:08*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0377	U *	0.211	0.211	1.00	0.387	pCi/L	05/22/17 12:30	06/05/17 11:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.0*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:09*	*1*
Y Carrier	*80.7*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:09*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.135	U	0.251	0.252	1.00	0.430	pCi/L	06/09/17 12:56	06/14/17 10:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.6*		*40 - 110*	*06/09/17 12:56*	*06/14/17 10:54*	*1*
Y Carrier	*84.1*		*40 - 110*	*06/09/17 12:56*	*06/14/17 10:54*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8D — **Lab Sample ID: 280-97201-4**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.236	U *	0.209	0.210	1.00	0.332	pCi/L	05/22/17 12:30	06/05/17 11:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.3*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:09*	*1*
Y Carrier	*80.4*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:09*	*1*

Client Sample ID: MW-8EB — **Lab Sample ID: 280-97201-5**
Date Collected: 05/15/17 14:00 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0146	U *	0.223	0.223	1.00	0.401	pCi/L	05/22/17 12:30	06/05/17 11:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.7*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:09*	*1*
Y Carrier	*75.9*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:09*	*1*

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-97201-1**
Date Collected: 05/16/17 11:05 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0989	U	0.215	0.215	5.00	0.369	pCi/L		06/15/17 13:58	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-97201-2**
Date Collected: 05/16/17 09:45 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0197	U	0.216	0.217	5.00	0.387	pCi/L		06/15/17 13:58	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-97201-3**
Date Collected: 05/15/17 13:15 — **Matrix: Water**
Date Received: 05/16/17 16:15

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.218	U	0.258	0.259	5.00	0.430	pCi/L		06/15/17 13:58	1

Client Sample Results

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

TestAmerica Job ID: 280-97201-1

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

Client Sample ID: MW-8D
Date Collected: 05/15/17 13:15
Date Received: 05/16/17 16:15

Lab Sample ID: 280-97201-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.369**		0.220	0.221	5.00	0.332	pCi/L		06/15/17 13:58	1

Client Sample ID: MW-8EB
Date Collected: 05/15/17 14:00
Date Received: 05/16/17 16:15

Lab Sample ID: 280-97201-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.00603	U	0.225	0.225	5.00	0.401	pCi/L		06/15/17 13:58	1

QC Sample Results

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

TestAmerica Job ID: 280-97201-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-279660/1-A
Matrix: Water
Analysis Batch: 279884

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 279660

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		05/19/17 14:00	05/22/17 16:44	1

Lab Sample ID: LCS 240-279660/2-A
Matrix: Water
Analysis Batch: 279884

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 279660

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.06		mg/L		106	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-279660/1-A
Matrix: Water
Analysis Batch: 280377

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 279660

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/19/17 14:00	05/24/17 17:50	1
Arsenic	ND		0.0050	0.00075	mg/L		05/19/17 14:00	05/24/17 17:50	1
Barium	ND		0.0050	0.0022	mg/L		05/19/17 14:00	05/24/17 17:50	1
Beryllium	ND		0.0010	0.00031	mg/L		05/19/17 14:00	05/24/17 17:50	1
Calcium	ND		1.0	0.58	mg/L		05/19/17 14:00	05/24/17 17:50	1
Cadmium	ND		0.0010	0.00021	mg/L		05/19/17 14:00	05/24/17 17:50	1
Cobalt	ND		0.0010	0.00019	mg/L		05/19/17 14:00	05/24/17 17:50	1
Chromium	ND		0.0020	0.00098	mg/L		05/19/17 14:00	05/24/17 17:50	1
Molybdenum	ND		0.010	0.0011	mg/L		05/19/17 14:00	05/24/17 17:50	1
Lead	ND		0.0010	0.00045	mg/L		05/19/17 14:00	05/24/17 17:50	1
Selenium	ND		0.0050	0.00089	mg/L		05/19/17 14:00	05/24/17 17:50	1
Thallium	ND		0.0010	0.00020	mg/L		05/19/17 14:00	05/24/17 17:50	1
Lithium	ND		0.0080	0.0017	mg/L		05/19/17 14:00	05/24/17 17:50	1

Lab Sample ID: LCS 240-279660/27-A
Matrix: Water
Analysis Batch: 280377

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 279660

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.100		mg/L		100	80 - 120
Arsenic	1.00	0.984		mg/L		98	80 - 120
Barium	1.00	0.997		mg/L		100	80 - 120
Beryllium	1.00	1.12		mg/L		112	80 - 120
Calcium	10.0	9.51		mg/L		95	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Molybdenum	0.100	0.104		mg/L		104	80 - 120
Lead	1.00	1.06		mg/L		106	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.257		mg/L		103	80 - 120
Lithium	0.100	0.101		mg/L		101	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-375636/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 375737 — **Prep Batch: 375636**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 17:07	1

Lab Sample ID: LCS 280-375636/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 375737 — **Prep Batch: 375636**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00433		mg/L		87	84 - 120

Lab Sample ID: 280-97201-1 MS — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 375737 — **Prep Batch: 375636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00500	0.00499		mg/L		100	75 - 125

Lab Sample ID: 280-97201-1 MSD — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 375737 — **Prep Batch: 375636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00500		mg/L		100	75 - 125	0	20

Method: 9040B - pH

Lab Sample ID: LCS 280-374294/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374294

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: LCSD 280-374294/31 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374294

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101	0	5

Lab Sample ID: LCS 280-375004/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 375004

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: LCS 280-376804/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376804

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 280-376685/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376685

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.23	J	3.0	0.25	mg/L			06/09/17 10:19	1
Fluoride	ND		0.50	0.060	mg/L			06/09/17 10:19	1
Sulfate	1.29	J	5.0	0.23	mg/L			06/09/17 10:19	1

Lab Sample ID: LCS 280-376685/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376685

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	5.03		mg/L		101	90 - 110
Sulfate	100	99.8		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-376685/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376685

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	102		mg/L		102	90 - 110	1	10
Fluoride	5.00	5.08		mg/L		102	90 - 110	1	10
Sulfate	100	101		mg/L		101	90 - 110	2	10

Lab Sample ID: MRL 280-376685/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376685

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.46	J	mg/L		98	50 - 150
Fluoride	0.200	0.174	J	mg/L		87	50 - 150
Sulfate	2.50	2.60	J	mg/L		104	50 - 150

Lab Sample ID: MB 280-376811/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376811

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			06/10/17 10:14	1
Fluoride	ND		0.50	0.060	mg/L			06/10/17 10:14	1
Sulfate	0.365	J	5.0	0.23	mg/L			06/10/17 10:14	1

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

Lab Sample ID: LCS 280-376811/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376811

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	4.76		mg/L		95	90 - 110
Sulfate	100	99.6		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-376811/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376811

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	4.77		mg/L		95	90 - 110	0	10
Sulfate	100	99.7		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-376811/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 376811

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.03	J	mg/L		81	50 - 150
Fluoride	0.200	0.185	J	mg/L		92	50 - 150
Sulfate	2.50	2.14	J	mg/L		86	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-374468/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374468

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/22/17 08:29	1

Lab Sample ID: LCS 280-374468/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374468

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: 280-97201-1 DU — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374468

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4500		4630		mg/L		3	10

QC Sample Results

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

TestAmerica Job ID: 280-97201-1

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

Lab Sample ID: MB 280-374357/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374357

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			05/19/17 16:26	1

Lab Sample ID: LCS 280-374357/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374357

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	98.0		mg/L		98	86 - 114

Lab Sample ID: LCSD 280-374357/2 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 374357

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	96.8		mg/L		97	86 - 114	1	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-309798/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 313281 — **Prep Batch: 309798**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04591	U	0.0714	0.0715	1.00	0.123	pCi/L	05/22/17 10:39	06/14/17 06:25	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.8*		*40 - 110*	*05/22/17 10:39*	*06/14/17 06:25*	*1*

Lab Sample ID: LCS 160-309798/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 313281 — **Prep Batch: 309798**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.79		1.12	1.00	0.0915	pCi/L	95	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.0*		*40 - 110*

Lab Sample ID: LCSD 160-309798/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 313281 — **Prep Batch: 309798**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	10.17		1.08	1.00	0.103	pCi/L	89	68 - 137	0.29	1

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

Lab Sample ID: LCSD 160-309798/3-A
Matrix: Water
Analysis Batch: 313281

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 309798

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*81.7*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-309815/1-A
Matrix: Water
Analysis Batch: 311847

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 309815

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.1831	U	0.223	0.223	1.00	0.439	pCi/L	05/22/17 12:30	06/05/17 11:04	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.8*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:04*	*1*
Y Carrier	*74.0*		*40 - 110*	*05/22/17 12:30*	*06/05/17 11:04*	*1*

Lab Sample ID: LCS 160-309815/2-A
Matrix: Water
Analysis Batch: 311847

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 309815

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			13.4	17.79		1.90	1.00	0.401	pCi/L	133	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.0*		*40 - 110*
Y Carrier	*76.6*		*40 - 110*

Lab Sample ID: LCSD 160-309815/3-A
Matrix: Water
Analysis Batch: 311847

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 309815

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			13.4	19.68	*	2.11	1.00	0.487	pCi/L	147	56 - 140	0.47	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*81.7*		*40 - 110*
Y Carrier	*73.6*		*40 - 110*

Lab Sample ID: MB 160-312857/1-A
Matrix: Water
Analysis Batch: 313350

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 312857

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1548	U	0.305	0.305	1.00	0.520	pCi/L	06/09/17 12:56	06/14/17 10:54	1

QC Sample Results

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

TestAmerica Job ID: 280-97201-1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110	06/09/17 12:56	06/14/17 10:54	1
Y Carrier	77.8		40 - 110	06/09/17 12:56	06/14/17 10:54	1

Lab Sample ID: LCS 160-312857/2-A
Matrix: Water
Analysis Batch: 313350

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 312857

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			17.7	24.18		2.55	1.00	0.454	pCi/L	136	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	96.2		40 - 110
Y Carrier	76.6		40 - 110

Lab Sample ID: LCSD 160-312857/3-A
Matrix: Water
Analysis Batch: 313350

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 312857

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			17.7	23.28		2.45	1.00	0.445	pCi/L	131	56 - 140	0.18	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	89.4		40 - 110
Y Carrier	85.2		40 - 110

QC Association Summary

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

TestAmerica Job ID: 280-97201-1

Metals

Prep Batch: 279660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total Recoverable	Water	3005A	
280-97201-2	MW-7	Total Recoverable	Water	3005A	
280-97201-3	MW-8	Total Recoverable	Water	3005A	
280-97201-4	MW-8D	Total Recoverable	Water	3005A	
280-97201-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-279660/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-279660/27-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-279660/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 279884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-279660/1-A	Method Blank	Total Recoverable	Water	6010C	279660
LCS 240-279660/2-A	Lab Control Sample	Total Recoverable	Water	6010C	279660

Analysis Batch: 280168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total Recoverable	Water	6010C	279660
280-97201-2	MW-7	Total Recoverable	Water	6010C	279660
280-97201-3	MW-8	Total Recoverable	Water	6010C	279660
280-97201-4	MW-8D	Total Recoverable	Water	6010C	279660
280-97201-5	MW-8EB	Total Recoverable	Water	6010C	279660

Analysis Batch: 280377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total Recoverable	Water	6020A	279660
280-97201-2	MW-7	Total Recoverable	Water	6020A	279660
280-97201-3	MW-8	Total Recoverable	Water	6020A	279660
280-97201-4	MW-8D	Total Recoverable	Water	6020A	279660
280-97201-5	MW-8EB	Total Recoverable	Water	6020A	279660
MB 240-279660/1-A	Method Blank	Total Recoverable	Water	6020A	279660
LCS 240-279660/27-A	Lab Control Sample	Total Recoverable	Water	6020A	279660

Prep Batch: 375636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	7470A	
280-97201-2	MW-7	Total/NA	Water	7470A	
280-97201-3	MW-8	Total/NA	Water	7470A	
280-97201-4	MW-8D	Total/NA	Water	7470A	
280-97201-5	MW-8EB	Total/NA	Water	7470A	
MB 280-375636/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-375636/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-97201-1 MS	MW-6	Total/NA	Water	7470A	
280-97201-1 MSD	MW-6	Total/NA	Water	7470A	

Analysis Batch: 375737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	7470A	375636
280-97201-2	MW-7	Total/NA	Water	7470A	375636
280-97201-3	MW-8	Total/NA	Water	7470A	375636
280-97201-4	MW-8D	Total/NA	Water	7470A	375636
280-97201-5	MW-8EB	Total/NA	Water	7470A	375636

Metals (Continued)

Analysis Batch: 375737 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-375636/1-A	Method Blank	Total/NA	Water	7470A	375636
LCS 280-375636/2-A	Lab Control Sample	Total/NA	Water	7470A	375636
280-97201-1 MS	MW-6	Total/NA	Water	7470A	375636
280-97201-1 MSD	MW-6	Total/NA	Water	7470A	375636

General Chemistry

Analysis Batch: 374294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	9040B	
280-97201-2	MW-7	Total/NA	Water	9040B	
LCS 280-374294/30	Lab Control Sample	Total/NA	Water	9040B	
LCSD 280-374294/31	Lab Control Sample Dup	Total/NA	Water	9040B	

Analysis Batch: 374357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	SM 2540D	
280-97201-2	MW-7	Total/NA	Water	SM 2540D	
280-97201-3	MW-8	Total/NA	Water	SM 2540D	
280-97201-4	MW-8D	Total/NA	Water	SM 2540D	
280-97201-5	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-374357/3	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-374357/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-374357/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 374468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	SM 2540C	
280-97201-2	MW-7	Total/NA	Water	SM 2540C	
280-97201-3	MW-8	Total/NA	Water	SM 2540C	
280-97201-4	MW-8D	Total/NA	Water	SM 2540C	
280-97201-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-374468/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-374468/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-97201-1 DU	MW-6	Total/NA	Water	SM 2540C	

Analysis Batch: 375004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-3	MW-8	Total/NA	Water	9040B	
280-97201-4	MW-8D	Total/NA	Water	9040B	
LCS 280-375004/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 376685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	9056A	
280-97201-1	MW-6	Total/NA	Water	9056A	
280-97201-2	MW-7	Total/NA	Water	9056A	
280-97201-2	MW-7	Total/NA	Water	9056A	
280-97201-3	MW-8	Total/NA	Water	9056A	
280-97201-3	MW-8	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 376685 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-4	MW-8D	Total/NA	Water	9056A	
280-97201-4	MW-8D	Total/NA	Water	9056A	
MB 280-376685/6	Method Blank	Total/NA	Water	9056A	
LCS 280-376685/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-376685/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-376685/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 376804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-376804/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 376811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-5	MW-8EB	Total/NA	Water	9056A	
MB 280-376811/6	Method Blank	Total/NA	Water	9056A	
LCS 280-376811/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-376811/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-376811/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 309798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	PrecSep-21	
280-97201-2	MW-7	Total/NA	Water	PrecSep-21	
280-97201-3	MW-8	Total/NA	Water	PrecSep-21	
280-97201-4	MW-8D	Total/NA	Water	PrecSep-21	
280-97201-5	MW-8EB	Total/NA	Water	PrecSep-21	
MB 160-309798/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-309798/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-309798/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 309815

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-1	MW-6	Total/NA	Water	PrecSep_0	
280-97201-2	MW-7	Total/NA	Water	PrecSep_0	
280-97201-4	MW-8D	Total/NA	Water	PrecSep_0	
280-97201-5	MW-8EB	Total/NA	Water	PrecSep_0	
MB 160-309815/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-309815/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-309815/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 312857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97201-3	MW-8	Total/NA	Water	PrecSep_0	
MB 160-312857/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-312857/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-312857/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-97201-1

Client Sample ID: MW-6

Lab Sample ID: 280-97201-1
Date Collected: 05/16/17 11:05
Matrix: Water
Date Received: 05/16/17 16:15

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	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			280168	05/23/17 17:32	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280377	05/24/17 19:44	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375636	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 17:12	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374294	05/18/17 14:24	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376685	06/09/17 12:03	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	376685	06/10/17 00:39	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	374468	05/22/17 08:29	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374357	05/19/17 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.65 mL	1.0 g	309798	05/22/17 10:39	LDE	TAL SL
Total/NA	Analysis	9315		1			313350	06/14/17 06:29	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.65 mL	1.0 g	309815	05/22/17 12:30	LDE	TAL SL
Total/NA	Analysis	9320		1			311850	06/05/17 11:08	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313654	06/15/17 13:58	RTM	TAL SL

Client Sample ID: MW-7

Lab Sample ID: 280-97201-2
Date Collected: 05/16/17 09:45
Matrix: Water
Date Received: 05/16/17 16:15

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	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			280168	05/23/17 17:36	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280377	05/24/17 19:49	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375636	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 17:19	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374294	05/18/17 14:27	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376685	06/09/17 12:21	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	376685	06/10/17 00:57	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	374468	05/22/17 08:29	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374357	05/19/17 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.99 mL	1.0 g	309798	05/22/17 10:39	LDE	TAL SL
Total/NA	Analysis	9315		1			313350	06/14/17 06:29	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.99 mL	1.0 g	309815	05/22/17 12:30	LDE	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	311850	06/05/17 11:09	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313654	06/15/17 13:58	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-97201-1

Client Sample ID: MW-8

Lab Sample ID: 280-97201-3
Date Collected: 05/15/17 13:15
Matrix: Water
Date Received: 05/16/17 16:15

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	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			280168	05/23/17 17:41	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280377	05/24/17 19:53	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375636	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 17:25	CDH	TAL DEN
Total/NA	Analysis	9040B		1			375004	05/24/17 17:50	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376685	06/09/17 12:38	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	376685	06/10/17 01:15	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	374468	05/22/17 08:29	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374357	05/19/17 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.27 mL	1.0 g	309798	05/22/17 10:39	LDE	TAL SL
Total/NA	Analysis	9315		1			313350	06/14/17 06:29	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.91 mL	1.0 g	312857	06/09/17 12:56	LDE	TAL SL
Total/NA	Analysis	9320		1			313350	06/14/17 10:54	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313654	06/15/17 13:58	RTM	TAL SL

Client Sample ID: MW-8D

Lab Sample ID: 280-97201-4
Date Collected: 05/15/17 13:15
Matrix: Water
Date Received: 05/16/17 16:15

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	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			280168	05/23/17 17:46	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280377	05/24/17 19:57	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375636	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 17:27	CDH	TAL DEN
Total/NA	Analysis	9040B		1			375004	05/24/17 17:45	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376685	06/09/17 12:56	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	376685	06/10/17 01:32	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	374468	05/22/17 08:29	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374357	05/19/17 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.27 mL	1.0 g	309798	05/22/17 10:39	LDE	TAL SL
Total/NA	Analysis	9315		1			313350	06/14/17 06:30	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.27 mL	1.0 g	309815	05/22/17 12:30	LDE	TAL SL
Total/NA	Analysis	9320		1			311850	06/05/17 11:09	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313654	06/15/17 13:58	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-97201-1

Client Sample ID: MW-8EB

Date Collected: 05/15/17 14:00
Date Received: 05/16/17 16:15

Lab Sample ID: 280-97201-5

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	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			280168	05/23/17 17:50	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279660	05/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280377	05/24/17 20:01	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375636	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 17:30	CDH	TAL DEN
Total/NA	Analysis	9040B		1			376804	06/09/17 17:59	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376811	06/10/17 11:59	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	374468	05/22/17 08:29	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374357	05/19/17 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.16 mL	1.0 g	309798	05/22/17 10:39	LDE	TAL SL
Total/NA	Analysis	9315		1			313350	06/14/17 06:30	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.16 mL	1.0 g	309815	05/22/17 12:30	LDE	TAL SL
Total/NA	Analysis	9320		1			311850	06/05/17 11:09	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313654	06/15/17 13:58	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 - Hayden

TestAmerica Job ID: 280-97201-1

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	10-31-17

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
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	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	01-31-18
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-17 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-17
Wisconsin	State Program	5	999518190	08-31-17 *

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	06-30-17 *
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-17 *
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17 *
Louisiana (DW)	NELAP	6	LA170011	12-31-17

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

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	09-30-17
Missouri	State Program	7	780	06-30-17 *
Nevada	State Program	9	MO000542017-1	07-31-17 *
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-16-10	07-31-17 *
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17 *
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* 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
Client Contact: Anna Lundin
Company: HDR Inc
Address: 9781 S. Meridian Blve Suite 400
City: Englewood
State, Zip: CO, 80112
Phone: 720-633-2380(Tel)
Email: anna.lundin@hdrinc.com
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Colorado

Sampler: Tara Kent
Phone: 7209337496
Due Date Requested:
TAT Requested (days): Standard
PO #: DEN-001
WO #:
Project #: 28014377
SSOW#:

Lab PM: Rothmeyer, Stephanie K
E-Mail: stephanie.rothmeyer@testamericainc.com
Carrier Tracking No(s):
COC No:
Page: Page 1 of 1
Job #:

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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~ TK				Water		N							
MW-6	5-16-17	1105	G	Water		N	✓	✓	✓	✓	✓		
MW-7	5-16-17	945	G	Water		N	✓	✓	✓	✓	✓		
MW-8	5-15-17	1315	G	Water		N	✓	✓	✓	✓	✓		
~~Field Duplicate~~ TK MW-8D	5-15-17	1315	G	Water		N	✓	✓	✓	✓	✓		
~~Equipment Blank~~ TK MW-8EB	5-15-17	1400	G	Water		N	✓	✓	✓	✓	✓		

280-97201 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: Tara Kent Date: 5-16-17 Time: 1615 Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
			[signature]	5/16/17 1615	TAD
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: 5.8°, 5.0°, IR#7, -0.0, 5/16/17 GP

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

Chain of Custody Record

280-97201 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie	DC No: 280-398914.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	State of Origin: Colorado
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA	Page: Page 1 of 1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/15/2017		Job #: 280-97201-1
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 - Hayden	Project #: 28014377		
Site: Xcel Energy CCR - Hayden 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/ Combined Radium-226 and Radium-228	9315_Ra226/PrecSep_21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-97201-1)	5/16/17	11:05 Mountain		Water			X	X	X	2	
MW-7 (280-97201-2)	5/16/17	09:45 Mountain		Water			X	X	X	2	
MW-8 (280-97201-3)	5/15/17	13:15 Mountain		Water			X	X	X	2	
MW-8D (280-97201-4)	5/15/17	13:15 Mountain		Water			X	X	X	2	
MW-8EB (280-97201-5)	5/15/17	14:00 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
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: 5/17/17 1415	Company: TAD	Received by: [signature]	Date/Time: 5/18/17 0855	Company: TASTL
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

1.4/C1.1

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: 280-398913.1
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 #: 280-97201-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 6/12/2017			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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:

S43

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-6 (280-97201-1)	5/16/17	11:05 Mountain		Water			X	X	1	, Use Collision Cell
MW-7 (280-97201-2)	5/16/17	09:45 Mountain		Water			X	X	1	Use Collision Cell
MW-8 (280-97201-3)	5/15/17	13:15 Mountain		Water			X	X	1	, Use Collision Cell
MW-8D (280-97201-4)	5/15/17	13:15 Mountain		Water			X	X	1	Use Collision Cell
MW-8EB (280-97201-5)	5/15/17	14:00 Mountain		Water			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: [signature]	Date/Time: 5/17/17 1435	Company: TAD	Received by: [signature]	Date/Time: 5-18-17 825	Company: TD
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 Canton Sample Receipt Form/Narrative **Login # :**_____
Canton Facility

Client Denver Site Name_____ Cooler unpacked by:
Cooler Received on 5-18-17 Opened on 5-18-17
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 _____
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. 1-4 °C Corrected Cooler Temp. 1-1 °C
   IR GUN #36 (CF **+0.8**°C) Observed Cooler Temp._____ °C Corrected Cooler Temp._____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 NA
    If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC697954**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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):_____.

Ref: SOP NC-SC-0005, Sample Receiving
\\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\Word Version Work Instructions\WI-NC-099-042717 Cooler Receipt Form.doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-97201-1

Login Number: 97201
List Number: 1
Creator: Parrott, Gregg S

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: 280-97201-1

Login Number: 97201
List Number: 2
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 05/18/17 01:05 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	19.0,0.2,0.9
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").	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 - Hayden

TestAmerica Job ID: 280-97201-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)								
Lab Sample ID	Client Sample ID	Ba (40-110)								
280-97201-1	MW-6	92.6								
280-97201-2	MW-7	95.0								
280-97201-3	MW-8	98.2								
280-97201-4	MW-8D	95.3								
280-97201-5	MW-8EB	91.7								
LCS 160-309798/2-A	Lab Control Sample	90.0								
LCSD 160-309798/3-A	Lab Control Sample Dup	81.7								
MB 160-309798/1-A	Method Blank	85.8								

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)								
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)							
280-97201-1	MW-6	92.6	80.4							
280-97201-2	MW-7	95.0	80.7							
280-97201-3	MW-8	95.6	84.1							
280-97201-4	MW-8D	95.3	80.4							
280-97201-5	MW-8EB	91.7	75.9							
LCS 160-309815/2-A	Lab Control Sample	90.0	76.6							
LCS 160-312857/2-A	Lab Control Sample	96.2	76.6							
LCSD 160-309815/3-A	Lab Control Sample Dup	81.7	73.6							
LCSD 160-312857/3-A	Lab Control Sample Dup	89.4	85.2							
MB 160-309815/1-A	Method Blank	85.8	74.0							
MB 160-312857/1-A	Method Blank	95.6	77.8							

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-99205-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
8/9/2017 3:29:09 PM

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

TestAmerica Job ID: 280-99205-1

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.
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
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.
H	Sample was prepped or analyzed beyond the specified holding time

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: 280-99205-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-99205-1

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 7/13/2017 at 2:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.1º C and 5.2º C.

TOTAL RECOVERABLE METALS
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 07/18/2017 and analyzed on 07/20/2017.

Boron failed the recovery criteria low for the MS and MSD of sample MW-6 (280-99205-1) in batch 240-288117. 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-6 (280-99205-1)[5X] and MW-7 (280-99205-2)[5X] 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 RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/18/2017 and analyzed on 07/20/2017.

Calcium failed the recovery criteria low for the MS of sample MW-6 (280-99205-1) in batch 240-287962. 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.

The continuing calibration verification (CCV) associated with batch 240-287962 recovered above the upper control limit for Arsenic and Antimony. The samples associated with this CCV were below the reporting limit for the affected analytes; therefore, the data have been reported.

The continuing calibration verification (CCV) associated with batch 240-287962 recovered above the upper control limit for Barium. The samples associated with this CCV were below the requested reporting limit for the affected analyte; therefore, the data have been reported.

Job ID: 280-99205-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL MERCURY
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 07/24/2017.

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

TOTAL DISSOLVED SOLIDS
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 07/17/2017 and 07/20/2017.

Reanalysis of the following sample was performed outside of the analytical holding time due to the original analysis being run at too high of a dilution: MW-8EB (280-99205-5). Sample was reanalyzed at the proper dilution.

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

TOTAL SUSPENDED SOLIDS
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 07/17/2017 and 07/19/2017.

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

CORROSIVITY (PH)
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 07/15/2017 and 07/19/2017.

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

ANIONS (28 DAYS)
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 07/18/2017 and 07/19/2017.

Samples MW-6 (280-99205-1)[20X], MW-7 (280-99205-2)[20X], MW-8 (280-99205-3)[2X], MW-8 (280-99205-3)[50X], MW-8D (280-99205-4)[2X] and MW-8D (280-99205-4)[50X] 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)
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 07/18/2017 and analyzed on 08/09/2017.

Radium-226 was detected in method blank MB 160-317963/1-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.

RADIUM-228
Samples MW-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 07/18/2017 and analyzed on 07/28/2017.

Job ID: 280-99205-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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-6 (280-99205-1), MW-7 (280-99205-2), MW-8 (280-99205-3), MW-8D (280-99205-4) and MW-8EB (280-99205-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 08/09/2017.

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 - Hayden

TestAmerica Job ID: 280-99205-1

Client Sample ID: MW-6 — Lab Sample ID: 280-99205-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	43		1.0	0.041	mg/L	5		6010C	Total Recoverable
Arsenic	0.0028	J ^	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0071		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00093	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	420		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00034	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.00039	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	1.5		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00051	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00028	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	70		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.33	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3100		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-99205-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	47		1.0	0.041	mg/L	5		6010C	Total Recoverable
Antimony	0.00077	J ^	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0026	J ^	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.011		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0027		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	410		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	0.00053	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0019	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.93		0.010	0.0011	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-7 (Continued) — Lab Sample ID: 280-99205-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.0012		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.011		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00028	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Lithium	0.29		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.9	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	130		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.19	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	3200		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	5200		40	19	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-8 — Lab Sample ID: 280-99205-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.96		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0048	J ^	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0057		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00029	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.011		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.039		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.70		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	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230		6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	4800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7700		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8D — Lab Sample ID: 280-99205-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.96		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0049	J ^	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.0058		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.00028	J	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 - Hayden

TestAmerica Job ID: 280-99205-1

Client Sample ID: MW-8D (Continued) — Lab Sample ID: 280-99205-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.0018	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.041		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.70		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	20.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230		6.0	0.51	mg/L	2		9056A	Total/NA
Sulfate	4800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7700		40	19	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-8EB — Lab Sample ID: 280-99205-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.045	J	0.20	0.0081	mg/L	1		6010C	Total Recoverable
Selenium	0.0014	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	5.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	24.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	0.55	J	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-99205-1

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

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 - Hayden

TestAmerica Job ID: 280-99205-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-99205-1	MW-6	Water	07/12/17 12:10	07/13/17 14:00
280-99205-2	MW-7	Water	07/12/17 11:00	07/13/17 14:00
280-99205-3	MW-8	Water	07/11/17 14:10	07/13/17 14:00
280-99205-4	MW-8D	Water	07/11/17 14:10	07/13/17 14:00
280-99205-5	MW-8EB	Water	07/11/17 14:50	07/13/17 14:00

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	43		1.0	0.041	mg/L		07/18/17 14:00	07/20/17 14:42	5

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	47		1.0	0.041	mg/L		07/18/17 14:00	07/20/17 16:13	5

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.96		0.20	0.0081	mg/L		07/18/17 14:00	07/20/17 15:12	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-99205-4**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.96		0.20	0.0081	mg/L		07/18/17 14:00	07/20/17 15:16	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.045	J	0.20	0.0081	mg/L		07/18/17 14:00	07/20/17 15:21	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^	0.0020	0.00057	mg/L		07/18/17 14:00	07/20/17 05:09	1
Arsenic	0.0028	J ^	0.0050	0.00075	mg/L		07/18/17 14:00	07/20/17 05:09	1
Barium	0.0071		0.0050	0.0022	mg/L		07/18/17 14:00	07/20/17 23:30	1
Beryllium	0.00093	J	0.0010	0.00031	mg/L		07/18/17 14:00	07/20/17 05:09	1
Calcium	420		1.0	0.58	mg/L		07/18/17 14:00	07/20/17 05:09	1
Cadmium	0.00034	J	0.0010	0.00021	mg/L		07/18/17 14:00	07/20/17 05:09	1
Cobalt	0.00039	J	0.0010	0.00019	mg/L		07/18/17 14:00	07/20/17 05:09	1
Chromium	ND		0.0020	0.00098	mg/L		07/18/17 14:00	07/20/17 05:09	1
Molybdenum	1.5		0.010	0.0011	mg/L		07/18/17 14:00	07/20/17 05:09	1
Lead	0.00051	J	0.0010	0.00045	mg/L		07/18/17 14:00	07/20/17 05:09	1
Selenium	0.015		0.0050	0.00089	mg/L		07/18/17 14:00	07/20/17 05:09	1
Thallium	0.00028	J	0.0010	0.00020	mg/L		07/18/17 14:00	07/20/17 05:09	1
Lithium	0.12		0.0080	0.0017	mg/L		07/18/17 14:00	07/20/17 23:30	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00077	J ^	0.0020	0.00057	mg/L		07/18/17 14:00	07/20/17 05:30	1

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

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0026	J ^	0.0050	0.00075	mg/L		07/18/17 14:00	07/20/17 05:30	1
Barium	0.011		0.0050	0.0022	mg/L		07/18/17 14:00	07/20/17 23:51	1
Beryllium	0.0027		0.0010	0.00031	mg/L		07/18/17 14:00	07/20/17 05:30	1
Calcium	410		1.0	0.58	mg/L		07/18/17 14:00	07/20/17 05:30	1
Cadmium	0.00045	J	0.0010	0.00021	mg/L		07/18/17 14:00	07/20/17 05:30	1
Cobalt	0.00053	J	0.0010	0.00019	mg/L		07/18/17 14:00	07/20/17 05:30	1
Chromium	0.0019	J	0.0020	0.00098	mg/L		07/18/17 14:00	07/20/17 05:30	1
Molybdenum	0.93		0.010	0.0011	mg/L		07/18/17 14:00	07/20/17 05:30	1
Lead	0.0012		0.0010	0.00045	mg/L		07/18/17 14:00	07/20/17 05:30	1
Selenium	0.011		0.0050	0.00089	mg/L		07/18/17 14:00	07/20/17 05:30	1
Thallium	0.00028	J	0.0010	0.00020	mg/L		07/18/17 14:00	07/20/17 05:30	1
Lithium	0.29		0.0080	0.0017	mg/L		07/18/17 14:00	07/20/17 05:30	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^	0.0020	0.00057	mg/L		07/18/17 14:00	07/20/17 05:34	1
Arsenic	0.0048	J ^	0.0050	0.00075	mg/L		07/18/17 14:00	07/20/17 05:34	1
Barium	0.0057		0.0050	0.0022	mg/L		07/18/17 14:00	07/20/17 23:55	1
Beryllium	ND		0.0010	0.00031	mg/L		07/18/17 14:00	07/20/17 05:34	1
Calcium	390		1.0	0.58	mg/L		07/18/17 14:00	07/20/17 05:34	1
Cadmium	ND		0.0010	0.00021	mg/L		07/18/17 14:00	07/20/17 05:34	1
Cobalt	0.00029	J	0.0010	0.00019	mg/L		07/18/17 14:00	07/20/17 05:34	1
Chromium	ND		0.0020	0.00098	mg/L		07/18/17 14:00	07/20/17 05:34	1
Molybdenum	0.011		0.010	0.0011	mg/L		07/18/17 14:00	07/20/17 05:34	1
Lead	ND		0.0010	0.00045	mg/L		07/18/17 14:00	07/20/17 05:34	1
Selenium	0.039		0.0050	0.00089	mg/L		07/18/17 14:00	07/20/17 05:34	1
Thallium	ND		0.0010	0.00020	mg/L		07/18/17 14:00	07/20/17 05:34	1
Lithium	0.70		0.0080	0.0017	mg/L		07/18/17 14:00	07/20/17 05:34	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-99205-4**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^	0.0020	0.00057	mg/L		07/18/17 14:00	07/20/17 05:47	1
Arsenic	0.0049	J ^	0.0050	0.00075	mg/L		07/18/17 14:00	07/20/17 05:47	1
Barium	0.0058		0.0050	0.0022	mg/L		07/18/17 14:00	07/20/17 23:59	1
Beryllium	ND		0.0010	0.00031	mg/L		07/18/17 14:00	07/20/17 05:47	1
Calcium	390		1.0	0.58	mg/L		07/18/17 14:00	07/20/17 05:47	1
Cadmium	ND		0.0010	0.00021	mg/L		07/18/17 14:00	07/20/17 05:47	1
Cobalt	0.00028	J	0.0010	0.00019	mg/L		07/18/17 14:00	07/20/17 05:47	1
Chromium	ND		0.0020	0.00098	mg/L		07/18/17 14:00	07/20/17 05:47	1
Molybdenum	0.0018	J	0.010	0.0011	mg/L		07/18/17 14:00	07/20/17 05:47	1
Lead	ND		0.0010	0.00045	mg/L		07/18/17 14:00	07/20/17 05:47	1
Selenium	0.041		0.0050	0.00089	mg/L		07/18/17 14:00	07/20/17 05:47	1
Thallium	ND		0.0010	0.00020	mg/L		07/18/17 14:00	07/20/17 05:47	1
Lithium	0.70		0.0080	0.0017	mg/L		07/18/17 14:00	07/20/17 05:47	1

Client Sample Results

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

TestAmerica Job ID: 280-99205-1

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

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^	0.0020	0.00057	mg/L		07/18/17 14:00	07/20/17 05:51	1
Arsenic	ND	^	0.0050	0.00075	mg/L		07/18/17 14:00	07/20/17 05:51	1
Barium	ND	^	0.0050	0.0022	mg/L		07/18/17 14:00	07/20/17 05:51	1
Beryllium	ND		0.0010	0.00031	mg/L		07/18/17 14:00	07/20/17 05:51	1
Calcium	ND		1.0	0.58	mg/L		07/18/17 14:00	07/20/17 05:51	1
Cadmium	ND		0.0010	0.00021	mg/L		07/18/17 14:00	07/20/17 05:51	1
Cobalt	ND		0.0010	0.00019	mg/L		07/18/17 14:00	07/20/17 05:51	1
Chromium	ND		0.0020	0.00098	mg/L		07/18/17 14:00	07/20/17 05:51	1
Molybdenum	ND		0.010	0.0011	mg/L		07/18/17 14:00	07/20/17 05:51	1
Lead	ND		0.0010	0.00045	mg/L		07/18/17 14:00	07/20/17 05:51	1
Selenium	**0.0014**	**J**	0.0050	0.00089	mg/L		07/18/17 14:00	07/20/17 05:51	1
Thallium	ND		0.0010	0.00020	mg/L		07/18/17 14:00	07/20/17 05:51	1
Lithium	ND		0.0080	0.0017	mg/L		07/18/17 14:00	07/20/17 05:51	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/24/17 11:34	07/24/17 15:51	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/24/17 11:34	07/24/17 15:53	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/24/17 11:34	07/24/17 16:00	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-99205-4**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/24/17 11:34	07/24/17 16:02	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/24/17 11:34	07/24/17 16:04	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU			07/15/17 07:39	1
Temperature	20.2	HF	1.0	1.0	Degrees C			07/15/17 07:39	1
Chloride	70		3.0	0.25	mg/L			07/18/17 10:43	1
Fluoride	0.33	J	0.50	0.060	mg/L			07/18/17 10:43	1
Sulfate	3100		100	4.6	mg/L			07/19/17 14:13	20
Total Dissolved Solids (TDS)	3600		20	9.4	mg/L			07/17/17 15:55	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			07/19/17 16:05	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.9	HF	0.1	0.1	SU			07/15/17 07:43	1
Temperature	20.1	HF	1.0	1.0	Degrees C			07/15/17 07:43	1
Chloride	130		3.0	0.25	mg/L			07/18/17 11:00	1
Fluoride	0.19	J	0.50	0.060	mg/L			07/18/17 11:00	1
Sulfate	3200		100	4.6	mg/L			07/19/17 14:31	20
Total Dissolved Solids (TDS)	5200		40	19	mg/L			07/17/17 15:55	1
Total Suspended Solids	16		4.0	1.1	mg/L			07/19/17 16:05	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

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			07/15/17 07:55	1
Temperature	20.6	HF	1.0	1.0	Degrees C			07/15/17 07:55	1
Chloride	230		6.0	0.51	mg/L			07/18/17 11:17	2
Fluoride	ND		1.0	0.12	mg/L			07/18/17 11:17	2
Sulfate	4800		250	12	mg/L			07/19/17 14:49	50
Total Dissolved Solids (TDS)	7700		40	19	mg/L			07/17/17 15:55	1
Total Suspended Solids	6.0		4.0	1.1	mg/L			07/17/17 17:24	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-99205-4**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

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			07/15/17 07:36	1
Temperature	20.3	HF	1.0	1.0	Degrees C			07/15/17 07:36	1
Chloride	230		6.0	0.51	mg/L			07/18/17 11:33	2
Fluoride	ND		1.0	0.12	mg/L			07/18/17 11:33	2
Sulfate	4800		250	12	mg/L			07/19/17 15:42	50
Total Dissolved Solids (TDS)	7700		40	19	mg/L			07/17/17 15:55	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			07/17/17 17:24	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

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			07/19/17 16:23	1
Temperature	24.5	HF	1.0	1.0	Degrees C			07/19/17 16:23	1

General Chemistry (Continued)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			07/18/17 10:26	1
Fluoride	ND		0.50	0.060	mg/L			07/18/17 10:26	1
Sulfate	**0.55**	**J**	5.0	0.23	mg/L			07/18/17 10:26	1
Total Dissolved Solids (TDS)	ND	H	10	4.7	mg/L			07/20/17 13:54	1
Total Suspended Solids	ND		4.0	1.1	mg/L			07/17/17 17:24	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.0772**		0.0562	0.0566	1.00	0.0759	pCi/L	07/18/17 10:07	08/09/17 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/18/17 10:07*	*08/09/17 07:35*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0609	U	0.0483	0.0486	1.00	0.0650	pCi/L	07/18/17 10:07	08/09/17 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*07/18/17 10:07*	*08/09/17 07:35*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.124**		0.0608	0.0618	1.00	0.0604	pCi/L	07/18/17 10:07	08/09/17 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/18/17 10:07*	*08/09/17 07:35*	*1*

Client Sample ID: MW-8D — **Lab Sample ID: 280-99205-4**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.112**		0.0573	0.0582	1.00	0.0557	pCi/L	07/18/17 10:07	08/09/17 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*07/18/17 10:07*	*08/09/17 07:35*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0687		0.0468	0.0472	1.00	0.0549	pCi/L	07/18/17 10:07	08/09/17 07:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/18/17 10:07*	*08/09/17 07:35*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0157	U	0.165	0.165	1.00	0.295	pCi/L	07/18/17 10:29	07/28/17 10:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*
Y Carrier	*97.7*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.246	U	0.178	0.179	1.00	0.275	pCi/L	07/18/17 10:29	07/28/17 10:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*
Y Carrier	*97.1*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0512	U	0.194	0.194	1.00	0.338	pCi/L	07/18/17 10:29	07/28/17 10:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*
Y Carrier	*94.5*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*

Client Sample Results

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

TestAmerica Job ID: 280-99205-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8D — **Lab Sample ID: 280-99205-4**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.262	U	0.179	0.180	1.00	0.276	pCi/L	07/18/17 10:29	07/28/17 11:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*07/18/17 10:29*	*07/28/17 11:00*	*1*
Y Carrier	*101*		*40 - 110*	*07/18/17 10:29*	*07/28/17 11:00*	*1*

Client Sample ID: MW-8EB — **Lab Sample ID: 280-99205-5**
Date Collected: 07/11/17 14:50 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0401	U	0.148	0.148	1.00	0.260	pCi/L	07/18/17 10:29	07/28/17 11:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/18/17 10:29*	*07/28/17 11:00*	*1*
Y Carrier	*99.7*		*40 - 110*	*07/18/17 10:29*	*07/28/17 11:00*	*1*

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-99205-1**
Date Collected: 07/12/17 12:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0929	U	0.174	0.174	5.00	0.295	pCi/L		08/09/17 14:18	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-99205-2**
Date Collected: 07/12/17 11:00 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.307**		0.184	0.186	5.00	0.275	pCi/L		08/09/17 14:18	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-99205-3**
Date Collected: 07/11/17 14:10 — **Matrix: Water**
Date Received: 07/13/17 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.175	U	0.204	0.204	5.00	0.338	pCi/L		08/09/17 14:18	1

Client Sample Results

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

TestAmerica Job ID: 280-99205-1

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

Client Sample ID: MW-8D
Date Collected: 07/11/17 14:10
Date Received: 07/13/17 14:00

Lab Sample ID: 280-99205-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.374**		0.188	0.190	5.00	0.276	pCi/L		08/09/17 14:18	1

Client Sample ID: MW-8EB
Date Collected: 07/11/17 14:50
Date Received: 07/13/17 14:00

Lab Sample ID: 280-99205-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.109	U	0.155	0.155	5.00	0.260	pCi/L		08/09/17 14:18	1

QC Sample Results

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

TestAmerica Job ID: 280-99205-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-287671/1-A
Matrix: Water
Analysis Batch: 288117

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 287671

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		07/18/17 14:00	07/20/17 14:16	1

Lab Sample ID: LCS 240-287671/2-A
Matrix: Water
Analysis Batch: 288117

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 287671

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.994		mg/L		99	80 - 120

Lab Sample ID: 280-99205-1 MS
Matrix: Water
Analysis Batch: 288117

Client Sample ID: MW-6
Prep Type: Total Recoverable
Prep Batch: 287671

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	43		1.00	43.6	4	mg/L		51	75 - 125

Lab Sample ID: 280-99205-1 MSD
Matrix: Water
Analysis Batch: 288117

Client Sample ID: MW-6
Prep Type: Total Recoverable
Prep Batch: 287671

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	43		1.00	43.4	4	mg/L		35	75 - 125	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-287671/1-A
Matrix: Water
Analysis Batch: 287962

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 287671

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/18/17 14:00	07/19/17 18:54	1
Arsenic	ND		0.0050	0.00075	mg/L		07/18/17 14:00	07/19/17 18:54	1
Barium	ND		0.0050	0.0022	mg/L		07/18/17 14:00	07/19/17 18:54	1
Beryllium	ND		0.0010	0.00031	mg/L		07/18/17 14:00	07/19/17 18:54	1
Calcium	ND		1.0	0.58	mg/L		07/18/17 14:00	07/19/17 18:54	1
Cadmium	ND		0.0010	0.00021	mg/L		07/18/17 14:00	07/19/17 18:54	1
Cobalt	ND		0.0010	0.00019	mg/L		07/18/17 14:00	07/19/17 18:54	1
Chromium	ND		0.0020	0.00098	mg/L		07/18/17 14:00	07/19/17 18:54	1
Molybdenum	ND		0.010	0.0011	mg/L		07/18/17 14:00	07/19/17 18:54	1
Lead	ND		0.0010	0.00045	mg/L		07/18/17 14:00	07/19/17 18:54	1
Selenium	ND		0.0050	0.00089	mg/L		07/18/17 14:00	07/19/17 18:54	1
Thallium	ND		0.0010	0.00020	mg/L		07/18/17 14:00	07/19/17 18:54	1
Lithium	ND		0.0080	0.0017	mg/L		07/18/17 14:00	07/19/17 18:54	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 240-287671/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 287962 — **Prep Batch: 287671**

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	0.973		mg/L		97	80 - 120
Barium	1.00	0.983		mg/L		98	80 - 120
Beryllium	1.00	0.948		mg/L		95	80 - 120
Calcium	10.0	9.57		mg/L		96	80 - 120
Cadmium	1.00	1.04		mg/L		104	80 - 120
Cobalt	1.00	1.02		mg/L		102	80 - 120
Chromium	1.00	0.966		mg/L		97	80 - 120
Molybdenum	0.100	0.0956		mg/L		96	80 - 120
Lead	1.00	1.00		mg/L		100	80 - 120
Selenium	1.00	0.970		mg/L		97	80 - 120
Thallium	0.250	0.244		mg/L		98	80 - 120
Lithium	0.100	0.106		mg/L		106	80 - 120

Lab Sample ID: 280-99205-1 MS — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 287962 — **Prep Batch: 287671**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND	^	0.100	0.120	^	mg/L		120	75 - 125
Arsenic	0.0028	J ^	1.00	1.19	^	mg/L		119	75 - 125
Beryllium	0.00093	J	1.00	0.889		mg/L		89	75 - 125
Calcium	420		10.0	403	4	mg/L		-144	75 - 125
Cadmium	0.00034	J	1.00	1.00		mg/L		100	75 - 125
Cobalt	0.00039	J	1.00	1.03		mg/L		103	75 - 125
Chromium	ND		1.00	0.991		mg/L		99	75 - 125
Molybdenum	1.5		0.100	1.57	4	mg/L		90	75 - 125
Lead	0.00051	J	1.00	0.976		mg/L		98	75 - 125
Selenium	0.015		1.00	0.945		mg/L		93	75 - 125
Thallium	0.00028	J	0.250	0.240		mg/L		96	75 - 125

Lab Sample ID: 280-99205-1 MS — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 288179 — **Prep Batch: 287671**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.0071		1.00	1.04		mg/L		103	75 - 125
Lithium	0.12		0.100	0.221		mg/L		101	75 - 125

Lab Sample ID: 280-99205-1 MSD — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 287962 — **Prep Batch: 287671**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND	^	0.100	0.122	^	mg/L		122	75 - 125	2	20
Arsenic	0.0028	J ^	1.00	1.23	^	mg/L		123	75 - 125	3	20
Beryllium	0.00093	J	1.00	0.918		mg/L		92	75 - 125	3	20
Calcium	420		10.0	425	4	mg/L		76	75 - 125	5	20
Cadmium	0.00034	J	1.00	1.02		mg/L		102	75 - 125	2	20

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-99205-1 MSD — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 287962 — **Prep Batch: 287671**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cobalt	0.00039	J	1.00	1.05		mg/L		105	75 - 125	3	20
Chromium	ND		1.00	1.02		mg/L		102	75 - 125	3	20
Molybdenum	1.5		0.100	1.60	4	mg/L		114	75 - 125	2	20
Lead	0.00051	J	1.00	0.991		mg/L		99	75 - 125	2	20
Selenium	0.015		1.00	1.01		mg/L		99	75 - 125	7	20
Thallium	0.00028	J	0.250	0.244		mg/L		97	75 - 125	2	20

Lab Sample ID: 280-99205-1 MSD — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 288179 — **Prep Batch: 287671**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.0071		1.00	1.06		mg/L		106	75 - 125	2	20
Lithium	0.12		0.100	0.232		mg/L		111	75 - 125	5	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-381747/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381886 — **Prep Batch: 381747**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		07/24/17 11:34	07/24/17 15:09	1

Lab Sample ID: LCS 280-381747/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381886 — **Prep Batch: 381747**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00500		mg/L		100	84 - 120

Lab Sample ID: LCSD 280-381747/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381886 — **Prep Batch: 381747**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00497		mg/L		99	84 - 120	0	15

Method: 9040B - pH

Lab Sample ID: LCS 280-380957/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 380957

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: LCS 280-381394/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381394

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: 280-99205-5 DU — **Client Sample ID: MW-8EB**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381394

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH adj. to 25 deg C	5.9	HF		5.9		SU				0.7	5
Temperature	24.5	HF		24.3		Degrees C				0.7	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-381133/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381133

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			07/18/17 10:09	1
Fluoride	ND		0.50	0.060	mg/L			07/18/17 10:09	1
Sulfate	ND		5.0	0.23	mg/L			07/18/17 10:09	1

Lab Sample ID: LCS 280-381133/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381133

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	104		mg/L		104	90 - 110		
Fluoride			5.00	5.28		mg/L		106	90 - 110		
Sulfate			100	103		mg/L		103	90 - 110		

Lab Sample ID: LCSD 280-381133/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381133

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			100	104		mg/L		104	90 - 110	0	10
Fluoride			5.00	5.28		mg/L		106	90 - 110	0	10
Sulfate			100	103		mg/L		103	90 - 110	0	10

Lab Sample ID: MRL 280-381133/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381133

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	0.181	J	mg/L		91	50 - 150		
Sulfate			2.50	2.39	J	mg/L		96	50 - 150		

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

Lab Sample ID: MB 280-381274/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381274

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			07/19/17 10:31	1

Lab Sample ID: LCS 280-381274/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381274

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-381274/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381274

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	101		mg/L		101	90 - 110	1	10

Lab Sample ID: MRL 280-381274/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381274

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	2.50	2.70	J	mg/L		108	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-381059/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381059

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			07/17/17 15:55	1

Lab Sample ID: LCS 280-381059/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381059

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	477		mg/L		95	86 - 110

Lab Sample ID: 280-99205-1 DU — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381059

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	3600		3560		mg/L		2	10

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: MB 280-381482/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381482

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			07/20/17 13:54	1

Lab Sample ID: LCS 280-381482/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381482

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	488		mg/L		98	86 - 110

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

Lab Sample ID: MB 280-381067/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381067

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			07/17/17 17:24	1

Lab Sample ID: LCS 280-381067/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381067

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	101		mg/L		101	86 - 114

Lab Sample ID: 280-99205-4 DU — **Client Sample ID: MW-8D**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381067

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	2.4	J	2.40	J	mg/L		0	10

Lab Sample ID: MB 280-381358/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381358

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			07/19/17 16:05	1

Lab Sample ID: LCS 280-381358/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	96.4		mg/L		96	86 - 114

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

Lab Sample ID: LCSD 280-381358/2 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 381358

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	102		mg/L		102	86 - 114	6	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-317963/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 321490 — **Prep Batch: 317963**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1684		0.0720	0.0736	1.00	0.0707	pCi/L	07/18/17 10:07	08/09/17 07:34	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*07/18/17 10:07*	*08/09/17 07:34*	*1*

Lab Sample ID: LCS 160-317963/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 321490 — **Prep Batch: 317963**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.83		1.11	1.00	0.0658	pCi/L	95	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.7*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-317965/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 319690 — **Prep Batch: 317965**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1074	U	0.174	0.174	1.00	0.294	pCi/L	07/18/17 10:29	07/28/17 10:59	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*
Y Carrier	*96.5*		*40 - 110*	*07/18/17 10:29*	*07/28/17 10:59*	*1*

Lab Sample ID: LCS 160-317965/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 319690 — **Prep Batch: 317965**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			13.1	14.97		1.56	1.00	0.258	pCi/L	114	56 - 140		

QC Sample Results

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

TestAmerica Job ID: 280-99205-1

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	99.7		40 - 110
Y Carrier	99.0		40 - 110

QC Association Summary

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

TestAmerica Job ID: 280-99205-1

Metals

Prep Batch: 287671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total Recoverable	Water	3005A	
280-99205-2	MW-7	Total Recoverable	Water	3005A	
280-99205-3	MW-8	Total Recoverable	Water	3005A	
280-99205-4	MW-8D	Total Recoverable	Water	3005A	
280-99205-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-287671/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-287671/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-287671/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-99205-1 MS	MW-6	Total Recoverable	Water	3005A	
280-99205-1 MS	MW-6	Total Recoverable	Water	3005A	
280-99205-1 MSD	MW-6	Total Recoverable	Water	3005A	
280-99205-1 MSD	MW-6	Total Recoverable	Water	3005A	

Analysis Batch: 287962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total Recoverable	Water	6020A	287671
280-99205-2	MW-7	Total Recoverable	Water	6020A	287671
280-99205-3	MW-8	Total Recoverable	Water	6020A	287671
280-99205-4	MW-8D	Total Recoverable	Water	6020A	287671
280-99205-5	MW-8EB	Total Recoverable	Water	6020A	287671
MB 240-287671/1-A	Method Blank	Total Recoverable	Water	6020A	287671
LCS 240-287671/3-A	Lab Control Sample	Total Recoverable	Water	6020A	287671
280-99205-1 MS	MW-6	Total Recoverable	Water	6020A	287671
280-99205-1 MSD	MW-6	Total Recoverable	Water	6020A	287671

Analysis Batch: 288117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total Recoverable	Water	6010C	287671
280-99205-2	MW-7	Total Recoverable	Water	6010C	287671
280-99205-3	MW-8	Total Recoverable	Water	6010C	287671
280-99205-4	MW-8D	Total Recoverable	Water	6010C	287671
280-99205-5	MW-8EB	Total Recoverable	Water	6010C	287671
MB 240-287671/1-A	Method Blank	Total Recoverable	Water	6010C	287671
LCS 240-287671/2-A	Lab Control Sample	Total Recoverable	Water	6010C	287671
280-99205-1 MS	MW-6	Total Recoverable	Water	6010C	287671
280-99205-1 MSD	MW-6	Total Recoverable	Water	6010C	287671

Analysis Batch: 288179

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total Recoverable	Water	6020A	287671
280-99205-2	MW-7	Total Recoverable	Water	6020A	287671
280-99205-3	MW-8	Total Recoverable	Water	6020A	287671
280-99205-4	MW-8D	Total Recoverable	Water	6020A	287671
280-99205-1 MS	MW-6	Total Recoverable	Water	6020A	287671
280-99205-1 MSD	MW-6	Total Recoverable	Water	6020A	287671

Prep Batch: 381747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	7470A	
280-99205-2	MW-7	Total/NA	Water	7470A	
280-99205-3	MW-8	Total/NA	Water	7470A	

Metals (Continued)

Prep Batch: 381747 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-4	MW-8D	Total/NA	Water	7470A	
280-99205-5	MW-8EB	Total/NA	Water	7470A	
MB 280-381747/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-381747/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-381747/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 381886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	7470A	381747
280-99205-2	MW-7	Total/NA	Water	7470A	381747
280-99205-3	MW-8	Total/NA	Water	7470A	381747
280-99205-4	MW-8D	Total/NA	Water	7470A	381747
280-99205-5	MW-8EB	Total/NA	Water	7470A	381747
MB 280-381747/1-A	Method Blank	Total/NA	Water	7470A	381747
LCS 280-381747/2-A	Lab Control Sample	Total/NA	Water	7470A	381747
LCSD 280-381747/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	381747

General Chemistry

Analysis Batch: 380957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	9040B	
280-99205-2	MW-7	Total/NA	Water	9040B	
280-99205-3	MW-8	Total/NA	Water	9040B	
280-99205-4	MW-8D	Total/NA	Water	9040B	
LCS 280-380957/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 381059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	SM 2540C	
280-99205-2	MW-7	Total/NA	Water	SM 2540C	
280-99205-3	MW-8	Total/NA	Water	SM 2540C	
280-99205-4	MW-8D	Total/NA	Water	SM 2540C	
MB 280-381059/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-381059/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-99205-1 DU	MW-6	Total/NA	Water	SM 2540C	

Analysis Batch: 381067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-3	MW-8	Total/NA	Water	SM 2540D	
280-99205-4	MW-8D	Total/NA	Water	SM 2540D	
280-99205-5	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-381067/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-381067/1	Lab Control Sample	Total/NA	Water	SM 2540D	
280-99205-4 DU	MW-8D	Total/NA	Water	SM 2540D	

Analysis Batch: 381133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	9056A	
280-99205-2	MW-7	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 381133 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-3	MW-8	Total/NA	Water	9056A	
280-99205-4	MW-8D	Total/NA	Water	9056A	
280-99205-5	MW-8EB	Total/NA	Water	9056A	
MB 280-381133/6	Method Blank	Total/NA	Water	9056A	
LCS 280-381133/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-381133/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-381133/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 381274

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	9056A	
280-99205-2	MW-7	Total/NA	Water	9056A	
280-99205-3	MW-8	Total/NA	Water	9056A	
280-99205-4	MW-8D	Total/NA	Water	9056A	
MB 280-381274/6	Method Blank	Total/NA	Water	9056A	
LCS 280-381274/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-381274/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-381274/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 381358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	SM 2540D	
280-99205-2	MW-7	Total/NA	Water	SM 2540D	
MB 280-381358/3	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-381358/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-381358/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 381394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-381394/4	Lab Control Sample	Total/NA	Water	9040B	
280-99205-5 DU	MW-8EB	Total/NA	Water	9040B	

Analysis Batch: 381482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-381482/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-381482/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 317963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	PrecSep-21	
280-99205-2	MW-7	Total/NA	Water	PrecSep-21	
280-99205-3	MW-8	Total/NA	Water	PrecSep-21	
280-99205-4	MW-8D	Total/NA	Water	PrecSep-21	
280-99205-5	MW-8EB	Total/NA	Water	PrecSep-21	
MB 160-317963/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-317963/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 317965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99205-1	MW-6	Total/NA	Water	PrecSep_0	
280-99205-2	MW-7	Total/NA	Water	PrecSep_0	
280-99205-3	MW-8	Total/NA	Water	PrecSep_0	
280-99205-4	MW-8D	Total/NA	Water	PrecSep_0	
280-99205-5	MW-8EB	Total/NA	Water	PrecSep_0	
MB 160-317965/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-317965/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-99205-1

Client Sample ID: MW-6

Date Collected: 07/12/17 12:10
Date Received: 07/13/17 14:00

Lab Sample ID: 280-99205-1

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	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			288117	07/20/17 14:42	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			287962	07/20/17 05:09	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288179	07/20/17 23:30	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	381747	07/24/17 11:34	CDH	TAL DEN
Total/NA	Analysis	7470A		1			381886	07/24/17 15:51	CDH	TAL DEN
Total/NA	Analysis	9040B		1			380957	07/15/17 07:39	A1D	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	381274	07/19/17 14:13	AFB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	381133	07/18/17 10:43	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	381059	07/17/17 15:55	SVC	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381358	07/19/17 16:05	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.30 mL	1.0 g	317963	07/18/17 10:07	LDE	TAL SL
Total/NA	Analysis	9315		1			321490	08/09/17 07:35	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.30 mL	1.0 g	317965	07/18/17 10:29	LDE	TAL SL
Total/NA	Analysis	9320		1			319690	07/28/17 10:59	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			321523	08/09/17 14:18	RTM	TAL SL

Client Sample ID: MW-7

Date Collected: 07/12/17 11:00
Date Received: 07/13/17 14:00

Lab Sample ID: 280-99205-2

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	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		5			288117	07/20/17 16:13	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			287962	07/20/17 05:30	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288179	07/20/17 23:51	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	381747	07/24/17 11:34	CDH	TAL DEN
Total/NA	Analysis	7470A		1			381886	07/24/17 15:53	CDH	TAL DEN
Total/NA	Analysis	9040B		1			380957	07/15/17 07:43	A1D	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	381274	07/19/17 14:31	AFB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	381133	07/18/17 11:00	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	381059	07/17/17 15:55	SVC	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381358	07/19/17 16:05	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.35 mL	1.0 g	317963	07/18/17 10:07	LDE	TAL SL
Total/NA	Analysis	9315		1			321490	08/09/17 07:35	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.35 mL	1.0 g	317965	07/18/17 10:29	LDE	TAL SL
Total/NA	Analysis	9320		1			319690	07/28/17 10:59	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			321523	08/09/17 14:18	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-99205-1

Client Sample ID: MW-8

Lab Sample ID: 280-99205-3
Date Collected: 07/11/17 14:10
Matrix: Water
Date Received: 07/13/17 14:00

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	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288117	07/20/17 15:12	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			287962	07/20/17 05:34	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288179	07/20/17 23:55	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	381747	07/24/17 11:34	CDH	TAL DEN
Total/NA	Analysis	7470A		1			381886	07/24/17 16:00	CDH	TAL DEN
Total/NA	Analysis	9040B		1			380957	07/15/17 07:55	A1D	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	381274	07/19/17 14:49	AFB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	381133	07/18/17 11:17	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	381059	07/17/17 15:55	SVC	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381067	07/17/17 17:24	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.83 mL	1.0 g	317963	07/18/17 10:07	LDE	TAL SL
Total/NA	Analysis	9315		1			321490	08/09/17 07:35	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.83 mL	1.0 g	317965	07/18/17 10:29	LDE	TAL SL
Total/NA	Analysis	9320		1			319690	07/28/17 10:59	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			321523	08/09/17 14:18	RTM	TAL SL

Client Sample ID: MW-8D

Lab Sample ID: 280-99205-4
Date Collected: 07/11/17 14:10
Matrix: Water
Date Received: 07/13/17 14:00

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	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288117	07/20/17 15:16	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			287962	07/20/17 05:47	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288179	07/20/17 23:59	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	381747	07/24/17 11:34	CDH	TAL DEN
Total/NA	Analysis	7470A		1			381886	07/24/17 16:02	CDH	TAL DEN
Total/NA	Analysis	9040B		1			380957	07/15/17 07:36	A1D	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	381274	07/19/17 15:42	AFB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	381133	07/18/17 11:33	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	381059	07/17/17 15:55	SVC	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381067	07/17/17 17:24	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.67 mL	1.0 g	317963	07/18/17 10:07	LDE	TAL SL
Total/NA	Analysis	9315		1			321490	08/09/17 07:35	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.67 mL	1.0 g	317965	07/18/17 10:29	LDE	TAL SL
Total/NA	Analysis	9320		1			319690	07/28/17 11:00	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			321523	08/09/17 14:18	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-99205-1

Client Sample ID: MW-8EB

Date Collected: 07/11/17 14:50
Date Received: 07/13/17 14:00

Lab Sample ID: 280-99205-5

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	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288117	07/20/17 15:21	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	287671	07/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			287962	07/20/17 05:51	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	381747	07/24/17 11:34	CDH	TAL DEN
Total/NA	Analysis	7470A		1			381886	07/24/17 16:04	CDH	TAL DEN
Total/NA	Analysis	9040B		1			381394	07/19/17 16:23	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	381133	07/18/17 10:26	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	381482	07/20/17 13:54	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381067	07/17/17 17:24	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.37 mL	1.0 g	317963	07/18/17 10:07	LDE	TAL SL
Total/NA	Analysis	9315		1			321490	08/09/17 07:35	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.37 mL	1.0 g	317965	07/18/17 10:29	LDE	TAL SL
Total/NA	Analysis	9320		1			319690	07/28/17 11:00	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			321523	08/09/17 14:18	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 - Hayden

TestAmerica Job ID: 280-99205-1

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	10-31-17

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
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	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
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	09-14-17 *
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-17 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17 *
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *
Wisconsin	State Program	5	999518190	08-31-17 *

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
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	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA170011	12-31-17

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

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	09-30-18
Missouri	State Program	7	780	06-30-17 *
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17 *
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17 *
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-17 *
West Virginia DEP	State Program	3	381	08-31-17 *

* 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
Phone: 720 9337496
Lab PM: Rothmeyer, Stephanie K
E-Mail: stephanie.rothmeyer@testamericainc.com
Carrier Tracking No(s):
COC No:
Page: Page 1 of 1

Client Contact: Anna Lundin
Company: HDR Inc
Address: 9781 S. Meridian Blve Suite 400
City: Englewood
State, Zip: CO, 80112
Phone: 720-633-2380(Tel)
Email: anna.lundin@hdrinc.com
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Colorado

Due Date Requested:
TAT Requested (days): Standard
PO #: DEN-001
WO #:
Project #: 28014377
SSOW#:

Job #:

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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~				~~Water~~		N							
MW-6	7-12-17	1210	G	Water		N	✓	✓	✓	✓	✓		
MW-7	7-12-17	1100	G	Water		N	✓	✓	✓	✓	✓		
MW-8	7-11-17	1410	G	Water		N	✓	✓	✓	✓	✓		
~~Field Duplicate~~ MW-8D	7-11-17	1410	G	Water		N	✓	✓	✓	✓	✓		
~~Equipment Blank~~ MW-8EB	7-11-17	1450	G	Water		N	✓	✓	✓	✓	✓		

280-99205 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: Tara Kent Date: 13 JULY 2017 Time: 1400 Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Tara Kent	13 JULY 2017 1400	HDR	[signature]	7-13-17 1400	TAD
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: 5.1, 5.2 + 0.6 IR #7 transfered by JT 7/13/17

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

Chain of Custody Record

280-99205 Chain of Custody

TestAmerica
LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	No: -405911.1
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 #: 280-99205-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/11/2017		
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 - Hayden	Project #: 28014377		
Site: Xcel Energy CCR - Hayden 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)	Ra226Ra228_GFPC/ Combined Radium-226 and Radium-228	9315_Ra226/PrecSep_21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-99205-1)	7/12/17	12:10 Mountain		Water			X	X	X	2	
MW-7 (280-99205-2)	7/12/17	11:00 Mountain		Water			X	X	X	2	
MW-8 (280-99205-3)	7/11/17	14:10 Mountain		Water			X	X	X	2	
MW-8D (280-99205-4)	7/11/17	14:10 Mountain		Water			X	X	X	2	
MW-8EB (280-99205-5)	7/11/17	14:50 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 *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: 7/14/17 1400	Company	Received by:	Date/Time: 7/15/17 0900	Company TA SR
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: 280-405912.1
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 #: 280-99205-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/8/2017			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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:

S54

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-6 (280-99205-1)	7/12/17	12:10 Mountain		Water			X	X	1	, Use Collision Cell
MW-7 (280-99205-2)	7/12/17	11:00 Mountain		Water			X	X	1	Use Collision Cell
MW-8 (280-99205-3)	7/11/17	14:10 Mountain		Water			X	X	1	, Use Collision Cell
MW-8D (280-99205-4)	7/11/17	14:10 Mountain		Water			X	X	1	Use Collision Cell
MW-8EB (280-99205-5)	7/11/17	14:50 Mountain		Water			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: Patricia Ine	Date/Time: 7/14/17 ~~7/14/15~~ 1415	Company: TAD	Received by: [signature]	Date/Time: 7/15/17 940	Company: TR
Relinquished by:	Date/Time: PV 7/14/17	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:		

8/9/2017

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

Canton Facility

Client TA Denver Site Name_____ Cooler unpacked by:

Cooler Received on 7/15/17 Opened on 7/15/17

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 _____

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

COOLANT: Wet Ice Blue Ice Dry Ice Water None

See Multiple Cooler Form

1. Cooler temperature upon receipt
   IR GUN# IR-8 (CF **-0.4** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF **+0**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC697954**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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):_____

Ref: SOP NC-SC-0005, Sample Receiving

\\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\Word Version Work Instructions\WI-NC-099-052317 Cooler Receipt Form.doc djl

TestAmerica Multiple Cooler Receipt Form/Narrative **Login # :**_____

Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
Client	36	14.2	14.2	ICE
↓	↓	17.6	17.6	↓

X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099H-071615 Cooler Receipt Form_page 2 - Multiple Coolers.doc rls

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-99205-1

Login Number: 99205
List Number: 1
Creator: True, Joshua A

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: 280-99205-1

Login Number: 99205
List Number: 2
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 07/15/17 01:30 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.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0,20.0,20.0,20.0
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 - Hayden

TestAmerica Job ID: 280-99205-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)							
280-99205-1	MW-6	101							
280-99205-2	MW-7	98.8							
280-99205-3	MW-8	101							
280-99205-4	MW-8D	102							
280-99205-5	MW-8EB	101							
LCS 160-317963/2-A	Lab Control Sample	99.7							
MB 160-317963/1-A	Method Blank	99.4							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
280-99205-1	MW-6	101	97.7						
280-99205-2	MW-7	98.8	97.1						
280-99205-3	MW-8	101	94.5						
280-99205-4	MW-8D	102	101						
280-99205-5	MW-8EB	101	99.7						
LCS 160-317965/2-A	Lab Control Sample	99.7	99.0						
MB 160-317965/1-A	Method Blank	99.4	96.5						

Tracer/Carrier Legend

Ba = Ba Carrier
Y = 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: 280-101349-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden
Revision: 1

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
12/18/2017 1:36:11 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

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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 - Hayden

TestAmerica Job ID: 280-101349-1

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.

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: 280-101349-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-101349-1

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 only Appendix III constituents.

RECEIPT
The samples were received on 9/20/2017 at 7:37 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.4º C and 4.2º C.

TOTAL RECOVERABLE METALS
Samples MW-6 (280-101349-1), MW-7 (280-101349-2), MW-8 (280-101349-3), MW-8D (280-101349-4) and MW-8EB (280-101349-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/22/2017 and analyzed on 09/25/2017 and 09/26/2017.

Samples MW-6 (280-101349-1)[10X] and MW-7 (280-101349-2)[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.

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-6 (280-101349-1), MW-7 (280-101349-2), MW-8 (280-101349-3), MW-8D (280-101349-4) and MW-8EB (280-101349-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/22/2017 and analyzed on 09/27/2017.

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

TOTAL DISSOLVED SOLIDS
Samples MW-6 (280-101349-1), MW-7 (280-101349-2), MW-8 (280-101349-3), MW-8D (280-101349-4) and MW-8EB (280-101349-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 09/21/2017.

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

CORROSIVITY (PH)
Samples MW-6 (280-101349-1), MW-7 (280-101349-2), MW-8 (280-101349-3), MW-8D (280-101349-4) and MW-8EB (280-101349-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/22/2017 and 10/11/2017.

Job ID: 280-101349-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following sample did not meet method requirements of duplicate pH analysis less than 0.05 units due to the low initial pH of the sample: MW-8EB (280-101349-5). The sample was reanalyzed with confirming results.

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

ANIONS (28 DAYS)
Samples MW-6 (280-101349-1), MW-7 (280-101349-2), MW-8 (280-101349-3), MW-8D (280-101349-4) and MW-8EB (280-101349-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/27/2017 and 09/29/2017.

Samples MW-6 (280-101349-1)[50X], MW-7 (280-101349-2)[50X], MW-8 (280-101349-3)[5X], MW-8 (280-101349-3)[50X], MW-8D (280-101349-4)[5X] and MW-8D (280-101349-4)[50X] 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.

Detection Summary

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

TestAmerica Job ID: 280-101349-1

Client Sample ID: MW-6 — Lab Sample ID: 280-101349-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	46		2.0	0.081	mg/L	10		6010C	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.5	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	68		3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	3100		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 280-101349-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	50		2.0	0.081	mg/L	10		6010C	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	130		3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	3200		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4600		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-101349-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.0		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Calcium	410		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	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	4600		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7000		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8D — Lab Sample ID: 280-101349-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.0		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Calcium	410		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
Chloride	230		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	4600		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	6800		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8EB — Lab Sample ID: 280-101349-5

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-101349-1

Client Sample ID: MW-8EB (Continued) — Lab Sample ID: 280-101349-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.040	J	0.20	0.0081	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	1.3	J	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-101349-1

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

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.

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

Sample Summary

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

TestAmerica Job ID: 280-101349-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-101349-1	MW-6	Water	09/18/17 16:05	09/20/17 07:37
280-101349-2	MW-7	Water	09/18/17 17:05	09/20/17 07:37
280-101349-3	MW-8	Water	09/19/17 10:20	09/20/17 07:37
280-101349-4	MW-8D	Water	09/19/17 10:20	09/20/17 07:37
280-101349-5	MW-8EB	Water	09/19/17 11:00	09/20/17 07:37

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-101349-1**
Date Collected: 09/18/17 16:05 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	46		2.0	0.081	mg/L		09/22/17 14:00	09/26/17 14:31	10

Client Sample ID: MW-7 — **Lab Sample ID: 280-101349-2**
Date Collected: 09/18/17 17:05 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	50		2.0	0.081	mg/L		09/22/17 14:00	09/26/17 14:43	10

Client Sample ID: MW-8 — **Lab Sample ID: 280-101349-3**
Date Collected: 09/19/17 10:20 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.0		0.20	0.0081	mg/L		09/22/17 14:00	09/25/17 16:37	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-101349-4**
Date Collected: 09/19/17 10:20 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.0		0.20	0.0081	mg/L		09/22/17 14:00	09/25/17 16:41	1

Client Sample ID: MW-8EB — **Lab Sample ID: 280-101349-5**
Date Collected: 09/19/17 11:00 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.040	J	0.20	0.0081	mg/L		09/22/17 14:00	09/25/17 16:46	1

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

Client Sample ID: MW-6 — **Lab Sample ID: 280-101349-1**
Date Collected: 09/18/17 16:05 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	430		1.0	0.58	mg/L		09/22/17 14:00	09/27/17 01:16	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-101349-2**
Date Collected: 09/18/17 17:05 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	430		1.0	0.58	mg/L		09/22/17 14:00	09/27/17 11:41	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-101349-3**
Date Collected: 09/19/17 10:20 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	410		1.0	0.58	mg/L		09/22/17 14:00	09/27/17 11:45	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-101349-4**
Date Collected: 09/19/17 10:20 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	410		1.0	0.58	mg/L		09/22/17 14:00	09/27/17 01:21	1

Client Sample Results

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

TestAmerica Job ID: 280-101349-1

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

Client Sample ID: MW-8EB — **Lab Sample ID: 280-101349-5**
Date Collected: 09/19/17 11:00 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		09/22/17 14:00	09/27/17 01:25	1

General Chemistry

Client Sample ID: MW-6 — **Lab Sample ID: 280-101349-1**
Date Collected: 09/18/17 16:05 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU			09/22/17 18:13	1
Temperature	21.1	HF	1.0	1.0	Degrees C			09/22/17 18:13	1
Chloride	68		3.0	0.25	mg/L			09/27/17 00:51	1
Sulfate	3100		250	12	mg/L			09/29/17 11:25	50
Fluoride	ND		25	3.0	mg/L			09/29/17 11:25	50
Total Dissolved Solids (TDS)	4500		40	19	mg/L			09/21/17 07:48	1

Client Sample ID: MW-7 — **Lab Sample ID: 280-101349-2**
Date Collected: 09/18/17 17:05 — **Matrix: Water**
Date Received: 09/20/17 07:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.9	HF	0.1	0.1	SU			09/22/17 18:22	1
Temperature	20.9	HF	1.0	1.0	Degrees C			09/22/17 18:22	1
Chloride	130		3.0	0.25	mg/L			09/27/17 01:26	1
Sulfate	3200		250	12	mg/L			09/29/17 12:32	50
Fluoride	ND		25	3.0	mg/L			09/29/17 12:32	50
Total Dissolved Solids (TDS)	4600		40	19	mg/L			09/21/17 07:48	1

Client Sample ID: MW-8 — **Lab Sample ID: 280-101349-3**
Date Collected: 09/19/17 10:20 — **Matrix: Water**
Date Received: 09/20/17 07:37

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			09/22/17 18:18	1
Temperature	21.1	HF	1.0	1.0	Degrees C			09/22/17 18:18	1
Chloride	230		15	1.3	mg/L			09/27/17 02:20	5
Sulfate	4600		250	12	mg/L			09/29/17 12:49	50
Fluoride	ND		25	3.0	mg/L			09/29/17 12:49	50
Total Dissolved Solids (TDS)	7000		40	19	mg/L			09/21/17 07:48	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-101349-4**
Date Collected: 09/19/17 10:20 — **Matrix: Water**
Date Received: 09/20/17 07:37

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			09/22/17 18:34	1
Temperature	21.2	HF	1.0	1.0	Degrees C			09/22/17 18:34	1
Chloride	230		15	1.3	mg/L			09/27/17 02:55	5
Sulfate	4600		250	12	mg/L			09/29/17 13:06	50
Fluoride	ND		25	3.0	mg/L			09/29/17 13:06	50
Total Dissolved Solids (TDS)	6800		40	19	mg/L			09/21/17 07:48	1

Client Sample Results

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

TestAmerica Job ID: 280-101349-1

General Chemistry

Client Sample ID: MW-8EB
Date Collected: 09/19/17 11:00
Date Received: 09/20/17 07:37

Lab Sample ID: 280-101349-5
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			10/11/17 10:48	1
Temperature	**21.3**	**HF**	1.0	1.0	Degrees C			10/11/17 10:48	1
Chloride	ND		3.0	0.25	mg/L			09/27/17 03:52	1
Sulfate	**1.3**	**J**	5.0	0.23	mg/L			09/29/17 13:23	1
Fluoride	ND		0.50	0.060	mg/L			09/29/17 13:23	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/21/17 07:48	1

QC Sample Results

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

TestAmerica Job ID: 280-101349-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-295935/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 296268 — **Prep Batch: 295935**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		09/22/17 14:00	09/25/17 14:29	1

Lab Sample ID: LCS 240-295935/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 296268 — **Prep Batch: 295935**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.12		mg/L		112	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-295935/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 296446 — **Prep Batch: 295935**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		09/22/17 14:00	09/26/17 23:25	1

Lab Sample ID: LCS 240-295935/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 296446 — **Prep Batch: 295935**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	9.19		mg/L		92	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-388748/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388748

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 280-390946/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 390946

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: 280-101349-5 DU — **Client Sample ID: MW-8EB**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 390946

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	5.8	HF	6.0		SU		2	5
Temperature	21.3	HF	21.2		Degrees C		0.3	10

QC Sample Results

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

TestAmerica Job ID: 280-101349-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-388956/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388956

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/26/17 12:20	1

Lab Sample ID: LCS 280-388956/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388956

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-388956/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388956

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	1	10

Lab Sample ID: MRL 280-388956/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388956

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.36	J	mg/L		94	50 - 150

Lab Sample ID: MB 280-389450/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			09/29/17 10:24	1
Fluoride	ND		0.50	0.060	mg/L			09/29/17 10:24	1

Lab Sample ID: LCS 280-389450/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	102		mg/L		102	90 - 110
Fluoride	5.00	5.31		mg/L		106	90 - 110

Lab Sample ID: LCSD 280-389450/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	102		mg/L		102	90 - 110	0	10
Fluoride	5.00	5.30		mg/L		106	90 - 110	0	10

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

Lab Sample ID: MRL 280-389450/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	2.50	2.52	J	mg/L		101	50 - 150
Fluoride	0.200	0.204	J	mg/L		102	50 - 150

Lab Sample ID: 280-101349-1 MS — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	3100		1250	4240		mg/L		92	80 - 120
Fluoride	ND		250	258		mg/L		103	80 - 120

Lab Sample ID: 280-101349-1 MSD — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	3100		1250	4220		mg/L		90	80 - 120	1	20
Fluoride	ND		250	258		mg/L		103	80 - 120	0	20

Lab Sample ID: 280-101349-1 DU — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 389450

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	3100		2990		mg/L		3	15
Fluoride	ND		ND		mg/L		NC	15

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-388387/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388387

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/21/17 07:48	1

Lab Sample ID: LCS 280-388387/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388387

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	488		mg/L		98	86 - 110

Lab Sample ID: 280-101349-1 DU — **Client Sample ID: MW-6**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 388387

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4500		4610		mg/L		3	10

QC Association Summary

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

TestAmerica Job ID: 280-101349-1

Metals

Prep Batch: 295935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total Recoverable	Water	3005A	
280-101349-2	MW-7	Total Recoverable	Water	3005A	
280-101349-3	MW-8	Total Recoverable	Water	3005A	
280-101349-4	MW-8D	Total Recoverable	Water	3005A	
280-101349-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-295935/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-295935/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-295935/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 296268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-3	MW-8	Total Recoverable	Water	6010C	295935
280-101349-4	MW-8D	Total Recoverable	Water	6010C	295935
280-101349-5	MW-8EB	Total Recoverable	Water	6010C	295935
MB 240-295935/1-A	Method Blank	Total Recoverable	Water	6010C	295935
LCS 240-295935/2-A	Lab Control Sample	Total Recoverable	Water	6010C	295935

Analysis Batch: 296444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total Recoverable	Water	6010C	295935
280-101349-2	MW-7	Total Recoverable	Water	6010C	295935

Analysis Batch: 296446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total Recoverable	Water	6020A	295935
280-101349-4	MW-8D	Total Recoverable	Water	6020A	295935
280-101349-5	MW-8EB	Total Recoverable	Water	6020A	295935
MB 240-295935/1-A	Method Blank	Total Recoverable	Water	6020A	295935
LCS 240-295935/3-A	Lab Control Sample	Total Recoverable	Water	6020A	295935

Analysis Batch: 296549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-2	MW-7	Total Recoverable	Water	6020A	295935
280-101349-3	MW-8	Total Recoverable	Water	6020A	295935

General Chemistry

Analysis Batch: 388387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total/NA	Water	SM 2540C	
280-101349-2	MW-7	Total/NA	Water	SM 2540C	
280-101349-3	MW-8	Total/NA	Water	SM 2540C	
280-101349-4	MW-8D	Total/NA	Water	SM 2540C	
280-101349-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-388387/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-388387/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-101349-1 DU	MW-6	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 388748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total/NA	Water	9040B	
280-101349-2	MW-7	Total/NA	Water	9040B	
280-101349-3	MW-8	Total/NA	Water	9040B	
280-101349-4	MW-8D	Total/NA	Water	9040B	
LCS 280-388748/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 388956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total/NA	Water	9056A	
280-101349-2	MW-7	Total/NA	Water	9056A	
280-101349-3	MW-8	Total/NA	Water	9056A	
280-101349-4	MW-8D	Total/NA	Water	9056A	
280-101349-5	MW-8EB	Total/NA	Water	9056A	
MB 280-388956/6	Method Blank	Total/NA	Water	9056A	
LCS 280-388956/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-388956/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-388956/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 389450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-1	MW-6	Total/NA	Water	9056A	
280-101349-2	MW-7	Total/NA	Water	9056A	
280-101349-3	MW-8	Total/NA	Water	9056A	
280-101349-4	MW-8D	Total/NA	Water	9056A	
280-101349-5	MW-8EB	Total/NA	Water	9056A	
MB 280-389450/6	Method Blank	Total/NA	Water	9056A	
LCS 280-389450/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-389450/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-389450/3	Lab Control Sample	Total/NA	Water	9056A	
280-101349-1 MS	MW-6	Total/NA	Water	9056A	
280-101349-1 MSD	MW-6	Total/NA	Water	9056A	
280-101349-1 DU	MW-6	Total/NA	Water	9056A	

Analysis Batch: 390946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-101349-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-390946/4	Lab Control Sample	Total/NA	Water	9040B	
280-101349-5 DU	MW-8EB	Total/NA	Water	9040B	

Lab Chronicle

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

TestAmerica Job ID: 280-101349-1

Client Sample ID: MW-6

Lab Sample ID: 280-101349-1
Date Collected: 09/18/17 16:05
Matrix: Water
Date Received: 09/20/17 07:37

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	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		10			296444	09/26/17 14:31	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			296446	09/27/17 01:16	DSH	TAL CAN
Total/NA	Analysis	9040B		1			388748	09/22/17 18:13	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	388956	09/27/17 00:51	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	389450	09/29/17 11:25	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	388387	09/21/17 07:48	JAP	TAL DEN

Client Sample ID: MW-7

Lab Sample ID: 280-101349-2
Date Collected: 09/18/17 17:05
Matrix: Water
Date Received: 09/20/17 07:37

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	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		10			296444	09/26/17 14:43	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			296549	09/27/17 11:41	DSH	TAL CAN
Total/NA	Analysis	9040B		1			388748	09/22/17 18:22	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	388956	09/27/17 01:26	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	389450	09/29/17 12:32	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	388387	09/21/17 07:48	JAP	TAL DEN

Client Sample ID: MW-8

Lab Sample ID: 280-101349-3
Date Collected: 09/19/17 10:20
Matrix: Water
Date Received: 09/20/17 07:37

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	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			296268	09/25/17 16:37	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			296549	09/27/17 11:45	DSH	TAL CAN
Total/NA	Analysis	9040B		1			388748	09/22/17 18:18	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	388956	09/27/17 02:20	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	389450	09/29/17 12:49	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	388387	09/21/17 07:48	JAP	TAL DEN

Lab Chronicle

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

TestAmerica Job ID: 280-101349-1

Client Sample ID: MW-8D

Lab Sample ID: 280-101349-4
Date Collected: 09/19/17 10:20
Matrix: Water
Date Received: 09/20/17 07:37

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	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			296268	09/25/17 16:41	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			296446	09/27/17 01:21	DSH	TAL CAN
Total/NA	Analysis	9040B		1			388748	09/22/17 18:34	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	388956	09/27/17 02:55	AFB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	389450	09/29/17 13:06	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	388387	09/21/17 07:48	JAP	TAL DEN

Client Sample ID: MW-8EB

Lab Sample ID: 280-101349-5
Date Collected: 09/19/17 11:00
Matrix: Water
Date Received: 09/20/17 07:37

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	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			296268	09/25/17 16:46	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	295935	09/22/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			296446	09/27/17 01:25	DSH	TAL CAN
Total/NA	Analysis	9040B		1			390946	10/11/17 10:48	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	388956	09/27/17 03:52	AFB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	389450	09/29/17 13:23	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	388387	09/21/17 07:48	JAP	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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-101349-1

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	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
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	02-23-18
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	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

* 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
Phone: 720 933 7496
Lab PM: Rothmeyer, Stephanie K
E-Mail: stephanie.rothmeyer@testamericainc.com
Carrier Tracking No(s):
COC No:
Page: Page 1 of 1

Client Contact: Anna Lundin
Company: HDR Inc
Address: 9781 S. Meridian Blve Suite 400
City: Englewood
State, Zip: CO, 80112
Phone: 720-633-2380(Tel)
Email: anna.lundin@hdrinc.com
Project Name: Xcel Energy GW CCR Monitoring - Hayden
Site: Colorado

Due Date Requested:
TAT Requested (days): Standard
PO #: DEN-001
WO #:
Project #: 28014377
SSOW#:

Job #:

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)	Metals - 6020A, 7470A	pH - 9040B, Anions - 9056A_28D	2540D - Total Suspended Solids	9315_Ra226, 9320_Ra228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D		
~~MW-5~~				~~Water~~		N							
MW-6	9.18.17	1605	G	Water		N	✓	✓	✓	✓	✓		
MW-7	9.18.17	1705	G	Water		N	✓	✓	✓	✓	✓		
MW-8	9.19.17	1020	G	Water		N	✓	✓	✓	✓	✓		
~~Field Duplicate~~ → MW-BD	9.19.17	1020	G	Water		N	✓	✓	✓	✓	✓		
~~Equipment Blank~~ → MW-8EB	9.19.17	1100	G	Water		N	✓	✓	✓	✓	✓		

280-101349 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: Tara Kent Date: 9.20.17 Time: 0737 Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Tara Kent	9-20-17 0737	HDR	[illegible]	9/20/17 0737	0737

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 3.3, 4.1 IR# 7 +0.1 RP 9-20-17

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: 280-412453.1
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 #: 280-101349-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 10/18/2017			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden 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)	Ra226Ra228_GFPC/ Combined Radium-226 and Radium-228	9315_Ra226/PrecSep_21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320_Ra228/PrecSep_0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6 (280-101349-1)	9/18/17	16:05 Mountain		Water			X	X	X	2	
MW-7 (280-101349-2)	9/18/17	17:05 Mountain		Water			X	X	X	2	
MW-8 (280-101349-3)	9/19/17	10:20 Mountain		Water			X	X	X	2	
MW-8D (280-101349-4)	9/19/17	10:20 Mountain		Water			X	X	X	2	
MW-8EB (280-101349-5)	9/19/17	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 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: 9/20/17 1615	Company	Received by:	Date/Time: 9.21.17 0930	Company TASR
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

18.4 | C18.4

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: 280-412452.1
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 #: 280-101349-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 10/13/2017			
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 - Hayden	Project #: 28014377			
Site: Xcel Energy CCR - Hayden Station	SSOW#:			

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:

SSO

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/3005A (MOD) Boron	6020A/3005A (MOD) 13 Total Metals (w/collision cell)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-6 (280-101349-1)	9/18/17	16:05 Mountain		Water			X	X	1	, Use Collision Cell
MW-7 (280-101349-2)	9/18/17	17:05 Mountain		Water			X	X	1	Use Collision Cell
MW-8 (280-101349-3)	9/19/17	10:20 Mountain		Water			X	X	1	, Use Collision Cell
MW-8D (280-101349-4)	9/19/17	10:20 Mountain		Water			X	X	1	Use Collision Cell
MW-8EB (280-101349-5)	9/19/17	11:00 Mountain		Water			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	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]	9/20/17 16:30		[signature]	9/21/17 930	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:

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

Client TA Denver Site Name_____ Cooler unpacked by: [signature]
Cooler Received on 9/21/17 Opened on 9/21/17
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 _____
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. 18.4 °C Corrected Cooler Temp. 18.4 °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 NA
   -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 11-15 have been checked at the originating laboratory.
11. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# **HC697954**
12. Were VOAs on the COC? — Yes No
13. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ — Yes No
15. 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):_____.

Ref: SOP NC-SC-0005, Sample Receiving
\\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\Word Version Work Instructions\WI-NC-099-091117 Cooler Receipt Form (3).doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-101349-1

Login Number: 101349
List Number: 1
Creator: Pottruff, Reed W

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	