Groundwater Monitoring 2017 Annual Report

for Compliance with the Coal Combustion Residuals (CCR) Rule

Cherokee 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 Cherokee 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. Cherokee Station, located in Denver, Colorado (**Figure 1**), is owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company. Cherokee Station has three incised impoundments subject to the CCR Rule: the West, Center, and East bottom ash impoundments (**Figure 2**). All three impoundments were inactive at the end of 2017, and are scheduled to be closed in 2018.

In 2017, groundwater monitoring was conducted at Cherokee 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.

The water quality collected from monitoring wells located upgradient of the CCR facilities has been compiled and statistical analysis has begun to develop background threshold values (BTV) for each constituent of interest (COI). In 2018 PSCo will determine if a downgradient observation from detection monitoring represents a statistically significant increase (SSI) over background.

2.0 Facility Description

Historically, Cherokee Station was a coal-fired, steam turbine electric generating station; the fuel source for the coal-fired units was sub-bituminous, low-sulfur coal supplied by several mines in western Colorado. Cherokee Station ceased burning coal in August 2017, but is now reconfigured to natural gas. During the active coal operations, the West, Center, and East impoundments were used for temporary storage of bottom ash. All three CCR impoundments no longer receive CCR material, and are scheduled to be closed in 2018. Fly ash was handled dry and collected in on-site silos. Both bottom ash and fly ash were hauled off site to facilities permitted for either beneficial use or disposal. The CCR units operation and monitoring are described further in the Cherokee Station Groundwater Monitoring System Certification (HDR, 2016).

2.1 Hydrogeology

The uppermost aquifer under Cherokee Station is the alluvial aquifer associated with the nearby South Platte River and is present across the site. Groundwater under the facility flows east, perpendicular to the South Platte River, where it ultimately discharges to the river (GeoTrans, Inc., 2009). In the area of the impoundments, the alluvial aquifer is between 8 and 38 feet thick, mostly sandy, and is underlain by the low permeability claystone deposits of the Denver Formation that inhibit vertical downward flow to the deeper, regional Arapahoe Aquifer (GeoTrans, Inc., 2009). The Denver Formation is over 70 feet thick in this area (CDH, 1993). Further hydrogeologic characterization of the site is provided in the Cherokee Station Groundwater Monitoring System Certification (HDR, 2016).

The CCR Rule requires, at a minimum, one upgradient and three downgradient monitoring wells per CCR unit to be completed in the uppermost aquifer. Section 257.9 of the Rule states that the

operator: *"…may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR unit."* In addition, the CCR Rule states that downgradient monitoring wells should be installed to: *"accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer."* The flow of groundwater under the CCR impoundments is eastward, perpendicular to the length of the impoundments. Five wells were sited for CCR compliance for a multiunit monitoring network of all three impoundments, two hydraulically upgradient monitoring wells (MW-7 and MW-13) and three downgradient monitoring wells (MW-8, MW-9, and MW-10) (**Figure 2**), as described in the Groundwater Monitoring System Certification (HDR, 2016).

The MW-7 well location on the west side of the West Impoundment is hydraulically upgradient of the impoundments (GeoTrans, Inc., 2009). However, the monitoring performed to date has identified that the ponds may have influenced well MW-7; therefore the MW-7 well is not representative of background water quality and the Groundwater Monitoring System Certification will be updated to reflect this. Monitoring well MW-13 is located upgradient of the CCR impoundments and serves as the background monitoring well for the CCR facilities **(Figure 2)**. Well MW-7 will be compared against background water quality in the same manner as the downgradient monitoring wells.

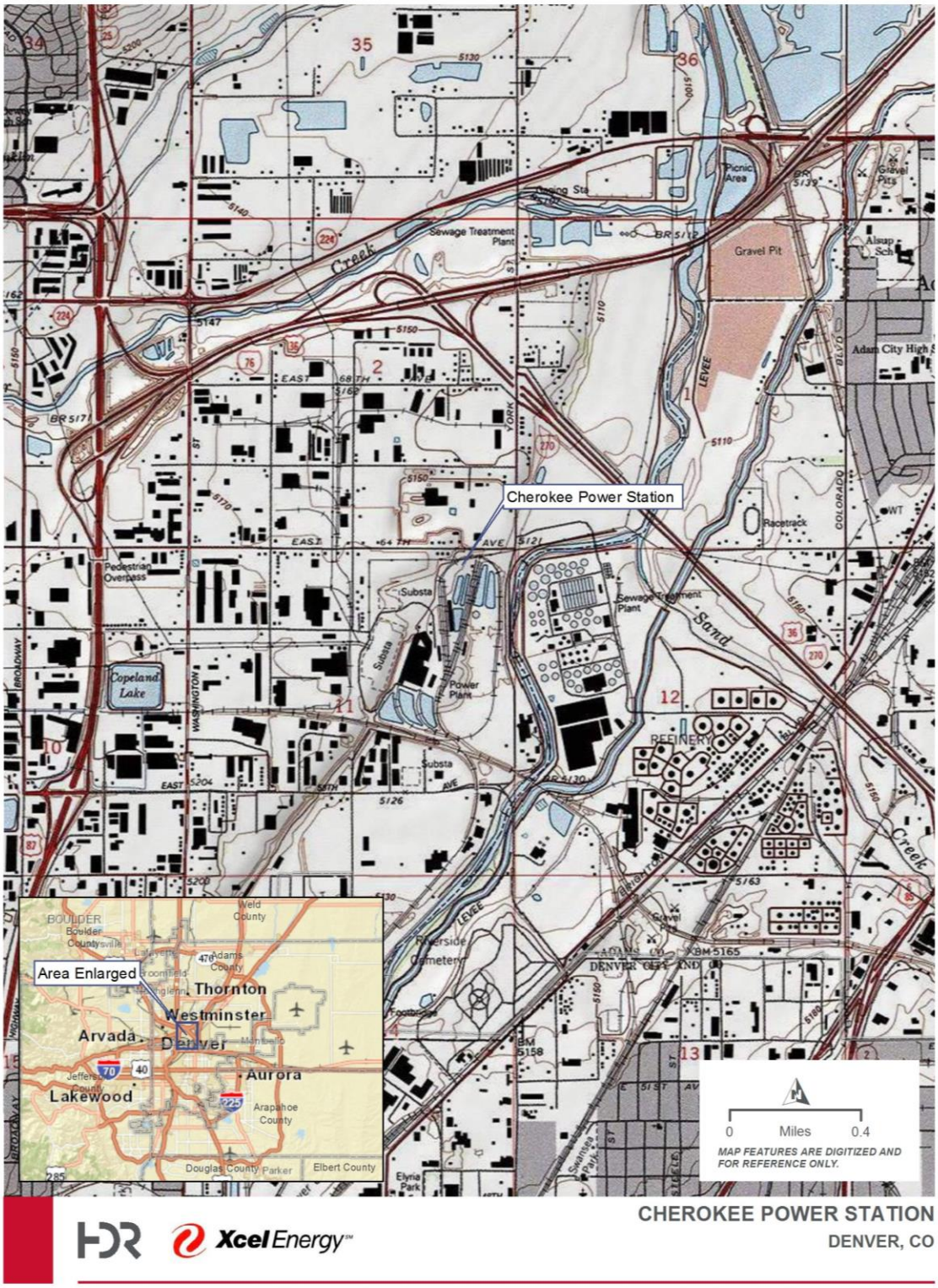


Figure 1. Vicinity map for Cherokee Station.

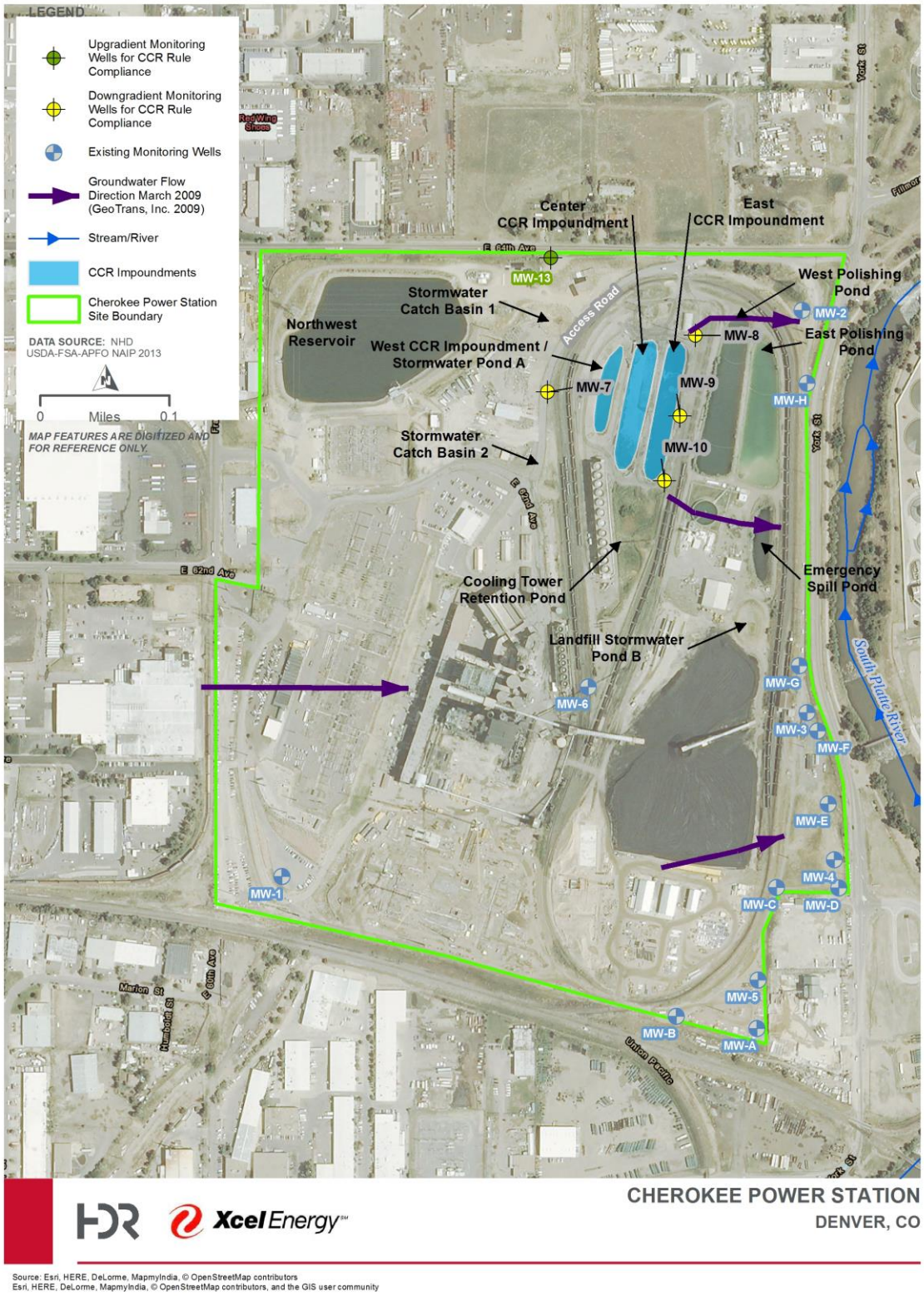


Figure 2. Cherokee Station – CCR unit and monitoring well location map.

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, between December 2015 and July 2017. The first detection monitoring event was performed September 6-7, 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 Event Purpose
MW-7	Upgradient[1]	December 9, 2015 March 1, 2016 May 4, 2016 August 23, 2016 November 9, 2016* February 27, 2017* May 15, 2017 July 17, 2017	8 / 6*	Background Monitoring
MW-7	Upgradient[1]	September 7, 2017	1 / 1	Detection Monitoring
MW-8	Downgradient	December 8, 2015 February 29, 2016 May 4, 2016 August 23, 2016* November 8, 2016 February 27, 2017 May 15, 2017* July 17, 2017*	8 / 5*	Background Monitoring
MW-8	Downgradient	September 7, 2017*	1 / 0*	Detection Monitoring
MW-9	Downgradient	December 8, 2015 March 1, 2016 May 5, 2016 August 23, 2016* November 7, 2016 February 27, 2017 May 15, 2017* July 17, 2017*	8 / 5*	Background Monitoring
MW-9	Downgradient	September 6, 2017	1 / 1	Detection Monitoring
MW-10	Downgradient	December 9, 2015 March 1, 2016 May 5, 2016 August 23, 2016 November 7, 2016 February 27, 2017 May 15, 2017 July 18, 2017	8 / 8	Background Monitoring
MW-10	Downgradient	September 6, 2017	1 / 1	Detection Monitoring
MW-13	Upgradient / Background	December 9, 2015 February 29, 2016 May 4, 2016 August 23, 2016 November 7, 2016 March 1, 2017 May 15, 2017 July 17, 2017	8 / 8	Background Monitoring
MW-13	Upgradient / Background	September 6, 2017	1 / 1	Detection Monitoring

[1]Hydraulically upgradient though potentially influenced by impoundments

*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 five 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 %RPD recoveries all were within control limits. The Matrix Spike/Duplicate (MS/MSD) %recoveries were slightly outside the 75-125 percent limit criteria. Data analyses required minimal qualifications, and all data were usable, even when qualified.

5.0 Monitoring Results

5.1 Water Levels and Groundwater Flow Direction

The water levels at both upgradient and downgradient monitoring wells were recorded during the background monitoring events (initial 8 sample events) between December 2015 and July 2017 and are provided in **Table 3**. Water levels measured during the detection monitoring event in September 2017 are also provided in **Table 3**. The contour map (**Appendix A**) and **Figure 3** graph confirm that monitoring wells MW-7 and MW-13 are located upgradient of the impoundments. Of these two, well MW-13 has been identified as the background well and water quality from MW-13 has been used to select the appropriate statistical method to evaluate groundwater data for the CCR management area. The groundwater flow direction appears to be consistent with previous conceptual models that groundwater flow direction is generally to the east, though appears to shift south as a result of the impoundment water management. Therefore, the selected downgradient wells are appropriately located to monitor the CCR impoundments.

The East CCR Impoundment had been dredged and drained prior to sample events in August 2016 and May and September 2017. During the time that the East CCR Impoundment was drained, well MW-8 was dry and the water level in the East Impoundment appeared approximately 20-25 feet below the ground surface at the time of monitoring, which is lower than the total well depth. This indicates that the water level in the East Impoundment, and potentially the other two impoundments, is potentially controlling the water levels in the monitoring wells surrounding the CCR ponds causing groundwater mounding beneath the pond(s).

Table 3. Groundwater elevations in monitoring wells at Cherokee Station

Well ID	Water Elevation (ft amsl)									Casing Elevation (ft amsl)
	Dec 2015	March 2016	May 2016	Aug 2016	Nov 2016	Feb 2017	May 2017	July 2017	Sept 2017	
MW-7	5148.36	5146.68	5149.60	5146.06	5142.44	5141.16	5149.10	5147.51	5146.62	5153.86
MW-8	5132.34	5132.55	5129.77	Dry*	5132.10	5131.74	Dry*	5127.16	Dry*	5140.64
MW-9	5122.20	5121.52	5119.63	Dry*	5124.37	5121.61	Dry*	5116.76	5118.21	5141.26
MW-10	5115.47	5113.13	5113.76	5111.54	5114.31	5111.63	5111.66	5110.70	5115.74	5140.88
MW-13	5143.26	5142.28	5142.94	5142.79	5142.32	5141.45	5141.84	5142.83	5142.68	5174.50

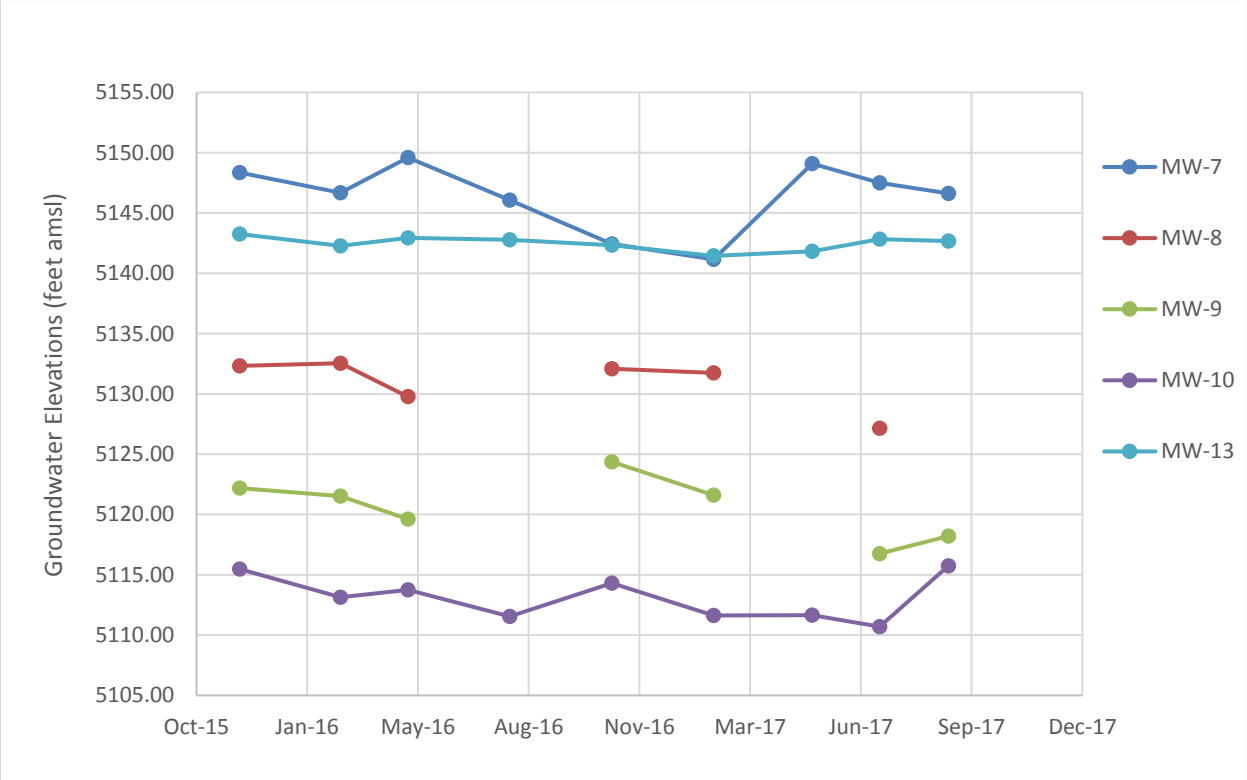


Figure 3. Groundwater elevations at wells around the impoundments.

5.2 Water Quality

Eight groundwater sampling events of both upgradient and downgradient wells occurred between December 8, 2015 and July 18, 2017 for background water monitoring. All five wells were sampled during the eight events with the exception of:

- downgradient wells MW-8 and MW-9, which were dry on three events due an impoundment having been drained, and
- well MW-7 which had too little water in the well to purge and sample on two events (**Tables 1 and 3**).

Groundwater was analyzed for CCR Rule Appendix III and IV COIs (**Table 2**). Laboratory reports are provided in **Appendix B**. Statistical evaluation began in 2017 of the water quality from the background monitoring well (MW-13) for the first 8 sample events to calculate a background threshold value (BTV) for each Appendix III COI.

Water quality sampling for the first groundwater detection monitoring event was performed on September 6-7, 2017. Samples were collected at four monitoring wells because MW-8 was dry. Water was analyzed for CCR Rule Appendix III COIs (**Table 2**). Laboratory reports are provided in **Appendix B**. Within 90 days of receiving the detection monitoring laboratory report the results will be compared against the BTVs to determine if there was an SSI of any Appendix III COI. This SSI evaluation will occur in 2018 and will therefore be reported in the 2018 annual report. Identification of an SSI for any COI at any downgradient monitoring well is an indication that further study is warranted. Further study includes the opportunity for PSCo to demonstrate in writing (within 90 days of detecting the SSI) that the SSI is the result of a source other than the CCR unit or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

6.0 Summary

The following observations are based on CCR Rule compliance monitoring data collected during the 2017 and prior sample events:

- All CCR certified network wells were installed in 2015 as described in the Groundwater Monitoring System Certification (HDR, 2016).
- All five of the CCR monitoring wells that make up the certified well network were monitored and sampled between December 2015 and July 2017 for background water quality, unless a well was dry. Statistical evaluation of upgradient water quality began to develop BTVs.
- All five of the CCR monitoring wells that make up the certified well network were monitored and sampled, unless a well was dry, during the September 2017 detection monitoring event.
- Groundwater flow direction is generally to the east under the CCR units.
- Cherokee Station status at the end of 2017 is in detection monitoring.

In 2018, and within 90 days of receiving the detection monitoring laboratory report, PSCo will evaluate the detection monitoring data to determine if a downgradient observation represents an SSI over background. If an SSI is identified for one or more Appendix III COIs in 2018, PSCo will within

90 days: 1) establish an assessment monitoring program, 2) demonstrate that a source other than the CCR unit caused the SSI over background, or 3) demonstrate that the SSI over background resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If an SSI is not detected, PSCo will continue detection monitoring in 2018.

7.0 References

CDH (Colorado Department of Health), 1993. Record of Decision ASARCO Globe Plant Site. Denver, Colorado. February 18, 1993.

GeoTrans, Inc., 2009. Letter to Christine Johnston, Xcel Energy. Groundwater/Surface-Ponds Data Evaluation, Cherokee Station, Denver, Colorado. March 2009.

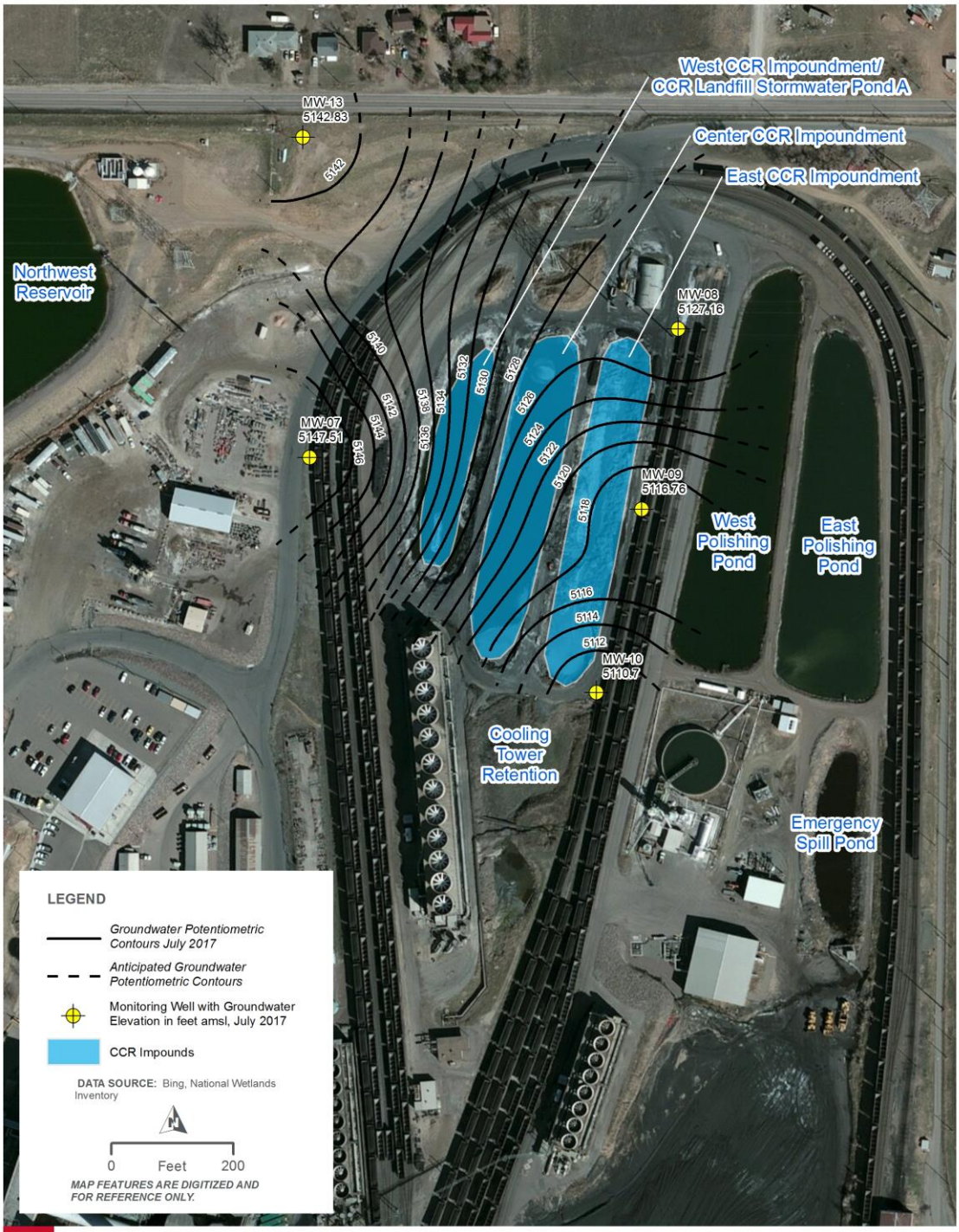
HDR, 2016. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Cherokee Station. April 26, 2016.

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

Tetra Tech, 2013. Inventory and Preliminary Classification Report, Waste Impoundments, Cherokee Station, Denver, Colorado. March 29, 2013.

Appendix A

Potentiometric Surface Map



Xcel Energy

CHEROKEE POWER STATION

ADAMS COUNTY, CO

PATH: J:\2015\15-115_XCEL_CORE_SAMPLING_TESTING_(WALTHER)\MAP_DOCS\GROUNDWATER_CONTROURS\CHEROKEE_POWER_STATION_PORTAIT_GW_WELL_CERT_GWELEV201707.MXD - USER: DNORPCHE - DATE: 12/11/2017

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: 280-77744-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Authorized for release by:
1/11/2016 9:36:02 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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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
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.
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.

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: 280-77744-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-77744-1

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 12/9/2015 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 4.8º C and 5.4º C.

The sample collection date and times are not listed on the COC. The collection information was logged per the container labels.

One 500-mL container was received without a sample ID. The container was logged as sample 280-77744-2, per the collection time listed on the container. All other volume was accounted for.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 12/15/2015 and analyzed on 12/16/2015 and 12/21/2015.

Calcium failed the recovery criteria high for the MS of sample MW-8 (280-77744-1) in batch 240-211893. Boron failed the recovery criteria high for the MSD of sample MW-8 (280-77744-1) in batch 240-211893. 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-8 (280-77744-1)[50X], MW-9 (280-77744-2)[20X], MW-10 (280-77744-3)[10X], MW-8D (280-77744-4)[50X] and MW-13 (280-77744-6)[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 MERCURY

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 12/15/2015.

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

TOTAL DISSOLVED SOLIDS

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 12/11/2015.

Job ID: 280-77744-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Constant weight was not achieved after 4 drying cycles for sample MW-13 (280-77744-6).

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

TOTAL SUSPENDED SOLIDS

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 12/14/2015 and 12/16/2015.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample MW-8 (280-77744-1). Sample non-homogeneity is suspected. Both the parent sample and the duplicate were below the reporting limit. As such, the %RPD is not accurately quantifiable.

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

CORROSIVITY (PH)

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 12/11/2015.

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

ANIONS (28 DAYS)

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/24/2015 and 12/25/2015.

Fluoride exceeded the RPD limit for the duplicate of sample 280-78290-4. Sample non-homogeneity is suspected.

Samples MW-8 (280-77744-1)[10X], MW-9 (280-77744-2)[10X], MW-10 (280-77744-3)[10X], MW-8D (280-77744-4)[10X] and MW-13 (280-77744-6)[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.

RADIUM-226 (GFPC)

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) 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-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5), MW-13 (280-77744-6).

The following sample was prepared at a reduced aliquot because the sample bottle was not completely full: MW-10 (280-77744-3).

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

RADIUM-228

Samples MW-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) 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-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5), MW-13 (280-77744-6).

The following sample was prepared at a reduced aliquot because the sample bottle was not completely full: MW-10 (280-77744-3).

Job ID: 280-77744-1 (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-8 (280-77744-1), MW-9 (280-77744-2), MW-10 (280-77744-3), MW-8D (280-77744-4), MW-8EB1 (280-77744-5) and MW-13 (280-77744-6) 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 - Cherokee

TestAmerica Job ID: 280-77744-1

Client Sample ID: MW-8 — Lab Sample ID: 280-77744-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00055	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0017	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.033		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00029	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	4.4		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.0013		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	350		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.0044		0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00016	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.10		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.15		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.021		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00020	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.85	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.4	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	450		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.8		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1500		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3000		20	9.4	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-9 — Lab Sample ID: 280-77744-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0014	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0026	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.032		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00054	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	3.1		0.40	0.22	mg/L	20		6020A	Total Recoverable
Cadmium	0.0011		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	210		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.00060	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.0010		0.0010	0.00011	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-9 (Continued) — Lab Sample ID: 280-77744-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.077		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.039		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0093		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00017	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.73	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	270		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	850		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1900		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 280-77744-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00099	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0081		0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.037		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00029	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	1.0		0.20	0.11	mg/L	10		6020A	Total Recoverable
Cadmium	0.00015	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	300		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.0020		0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00061	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.025		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.028		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0061		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	9.96	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	440		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	790		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000		10	4.7	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-8D — Lab Sample ID: 280-77744-4

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8D (Continued) — Lab Sample ID: 280-77744-4

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	0.0017	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.033		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00026	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	4.8		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.0011		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	370		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.0046		0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.10		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.15		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.020		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.80	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	430		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.8		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3000		20	9.4	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-8EB1 — Lab Sample ID: 280-77744-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.00015	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Cobalt	0.000024	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	5.89	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.7	HF	1.00	1.00	Degrees C	1		9040B	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-77744-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00016	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.00053	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.097		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.000097	J	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	0.82		0.10	0.055	mg/L	5		6020A	Total Recoverable
Calcium	160		1.0	0.24	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 - Cherokee

TestAmerica Job ID: 280-77744-1

Client Sample ID: MW-13 (Continued)

Lab Sample ID: 280-77744-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.00098	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00027	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00015	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.040		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0027	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0053		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.58	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	220		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.0		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	160		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1100		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-77744-1

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 - Cherokee

TestAmerica Job ID: 280-77744-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-77744-1	MW-8	Ground Water	12/08/15 13:00	12/09/15 14:00
280-77744-2	MW-9	Ground Water	12/08/15 15:06	12/09/15 14:00
280-77744-3	MW-10	Ground Water	12/08/15 08:55	12/09/15 14:00
280-77744-4	MW-8D	Water	12/08/15 13:00	12/09/15 14:00
280-77744-5	MW-8EB1	Water	12/08/15 13:00	12/09/15 14:00
280-77744-6	MW-13	Water	12/09/15 10:00	12/09/15 14:00

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

Client Sample ID: MW-8
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00055	J	0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 10:06	1
Arsenic	0.0017	J	0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 10:06	1
Barium	0.033		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 10:06	1
Beryllium	0.00029	J	0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 10:06	1
Boron	4.4		1.0	0.55	mg/L		12/15/15 11:56	12/21/15 15:04	50
Cadmium	0.0013		0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 10:06	1
Calcium	350		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 10:06	1
Chromium	ND		0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 10:06	1
Cobalt	0.0044		0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 10:06	1
Lead	0.00016	J	0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 10:06	1
Lithium	0.10		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 10:06	1
Molybdenum	0.15		0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 10:06	1
Selenium	0.021		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 10:06	1
Thallium	0.00020	J	0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 10:06	1

Client Sample ID: MW-9
Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0014	J	0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 10:26	1
Arsenic	0.0026	J	0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 10:26	1
Barium	0.032		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 10:26	1
Beryllium	0.00054	J	0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 10:26	1
Boron	3.1		0.40	0.22	mg/L		12/15/15 11:56	12/21/15 15:20	20
Cadmium	0.0011		0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 10:26	1
Calcium	210		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 10:26	1
Chromium	ND		0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 10:26	1
Cobalt	0.00060	J	0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 10:26	1
Lead	0.0010		0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 10:26	1
Lithium	0.077		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 10:26	1
Molybdenum	0.039		0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 10:26	1
Selenium	0.0093		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 10:26	1
Thallium	0.00017	J	0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 10:26	1

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00099	J	0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 10:30	1
Arsenic	0.0081		0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 10:30	1
Barium	0.037		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 10:30	1
Beryllium	0.00029	J	0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 10:30	1
Boron	1.0		0.20	0.11	mg/L		12/15/15 11:56	12/21/15 15:24	10
Cadmium	0.00015	J	0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 10:30	1
Calcium	300		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 10:30	1
Chromium	0.0020		0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 10:30	1
Cobalt	0.00061	J	0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 10:30	1
Lead	ND		0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 10:30	1
Lithium	0.025		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 10:30	1
Molybdenum	0.028		0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 10:30	1

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

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	**0.0061**		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 10:30	1
Thallium	ND		0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 10:30	1

Client Sample ID: MW-8D
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00030**	**J**	0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 10:34	1
Arsenic	**0.0017**	**J**	0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 10:34	1
Barium	**0.033**		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 10:34	1
Beryllium	**0.00026**	**J**	0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 10:34	1
Boron	**4.8**		1.0	0.55	mg/L		12/15/15 11:56	12/21/15 15:28	50
Cadmium	**0.0011**		0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 10:34	1
Calcium	**370**		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 10:34	1
Chromium	ND		0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 10:34	1
Cobalt	**0.0046**		0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 10:34	1
Lead	ND		0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 10:34	1
Lithium	**0.10**		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 10:34	1
Molybdenum	**0.15**		0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 10:34	1
Selenium	**0.020**		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 10:34	1
Thallium	ND		0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 10:34	1

Client Sample ID: MW-8EB1
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 10:46	1
Arsenic	ND		0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 10:46	1
Barium	ND		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 10:46	1
Beryllium	**0.00015**	**J**	0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 10:46	1
Boron	ND		0.020	0.011	mg/L		12/15/15 11:56	12/21/15 15:32	1
Cadmium	ND		0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 10:46	1
Calcium	ND		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 10:46	1
Chromium	ND		0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 10:46	1
Cobalt	**0.000024**	**J**	0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 10:46	1
Lead	ND		0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 10:46	1
Lithium	ND		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 10:46	1
Molybdenum	ND		0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 10:46	1
Selenium	ND		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 10:46	1
Thallium	ND		0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 10:46	1

Client Sample ID: MW-13
Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00016**	**J**	0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 10:50	1
Arsenic	**0.00053**	**J**	0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 10:50	1
Barium	**0.097**		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 10:50	1
Beryllium	**0.000097**	**J**	0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 10:50	1
Boron	**0.82**		0.10	0.055	mg/L		12/15/15 11:56	12/21/15 15:44	5

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

Client Sample ID: MW-13
Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 10:50	1
Calcium	**160**		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 10:50	1
Chromium	**0.00098**	**J**	0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 10:50	1
Cobalt	**0.00027**	**J**	0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 10:50	1
Lead	**0.00015**	**J**	0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 10:50	1
Lithium	**0.040**		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 10:50	1
Molybdenum	**0.0027**	**J**	0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 10:50	1
Selenium	**0.0053**		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 10:50	1
Thallium	ND		0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 10:50	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-8
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 16:10	1

Client Sample ID: MW-9
Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 16:17	1

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 16:20	1

Client Sample ID: MW-8D
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 16:22	1

Client Sample ID: MW-8EB1
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 16:24	1

Client Sample ID: MW-13
Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 16:27	1

General Chemistry

Client Sample ID: MW-8
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.85	HF	0.100	0.100	SU			12/11/15 23:32	1
Temperature	23.4	HF	1.00	1.00	Degrees C			12/11/15 23:32	1
Chloride	450		30	2.5	mg/L			12/24/15 23:58	10
Fluoride	1.8		0.50	0.060	mg/L			12/24/15 23:41	1
Sulfate	1500		50	2.3	mg/L			12/24/15 23:58	10
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L			12/11/15 16:44	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			12/14/15 12:31	1

Client Sample ID: MW-9
Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.73	HF	0.100	0.100	SU			12/11/15 23:18	1
Temperature	23.5	HF	1.00	1.00	Degrees C			12/11/15 23:18	1
Chloride	270		30	2.5	mg/L			12/25/15 01:09	10
Fluoride	2.5		0.50	0.060	mg/L			12/25/15 00:51	1
Sulfate	850		50	2.3	mg/L			12/25/15 01:09	10
Total Dissolved Solids (TDS)	1900		10	4.7	mg/L			12/11/15 16:44	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			12/14/15 12:31	1

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	9.96	HF	0.100	0.100	SU			12/11/15 23:28	1
Temperature	23.5	HF	1.00	1.00	Degrees C			12/11/15 23:28	1
Chloride	440		30	2.5	mg/L			12/25/15 01:45	10
Fluoride	2.3		0.50	0.060	mg/L			12/25/15 01:27	1
Sulfate	790		50	2.3	mg/L			12/25/15 01:45	10
Total Dissolved Solids (TDS)	2000		10	4.7	mg/L			12/11/15 16:44	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			12/14/15 12:31	1

Client Sample ID: MW-8D
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.80	HF	0.100	0.100	SU			12/11/15 23:23	1
Temperature	23.5	HF	1.00	1.00	Degrees C			12/11/15 23:23	1
Chloride	430		30	2.5	mg/L			12/25/15 02:20	10
Fluoride	1.8		0.50	0.060	mg/L			12/25/15 02:02	1
Sulfate	1400		50	2.3	mg/L			12/25/15 02:20	10
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L			12/11/15 16:44	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			12/14/15 12:31	1

Client Sample ID: MW-8EB1
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.89	HF	0.100	0.100	SU			12/11/15 23:07	1
Temperature	23.7	HF	1.00	1.00	Degrees C			12/11/15 23:07	1

General Chemistry (Continued)

Client Sample ID: MW-8EB1
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/25/15 02:38	1
Fluoride	ND		0.50	0.060	mg/L			12/25/15 02:38	1
Sulfate	ND		5.0	0.23	mg/L			12/25/15 02:38	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/11/15 16:44	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/14/15 12:31	1

Client Sample ID: MW-13
Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.58**	**HF**	0.100	0.100	SU			12/11/15 23:12	1
Temperature	**23.5**	**HF**	1.00	1.00	Degrees C			12/11/15 23:12	1
Chloride	**220**		15	1.3	mg/L			12/25/15 03:13	5
Fluoride	**1.0**		0.50	0.060	mg/L			12/25/15 02:55	1
Sulfate	**160**		25	1.2	mg/L			12/25/15 03:13	5
Total Dissolved Solids (TDS)	**1100**		10	4.7	mg/L			12/11/15 16:44	1
Total Suspended Solids	**3.2**	**J**	4.0	1.1	mg/L			12/16/15 15:32	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.265**		0.145	0.147	1.00	0.200	pCi/L	12/15/15 12:45	01/06/16 07:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.7*		*40 - 110*	*12/15/15 12:45*	*01/06/16 07:16*	*1*

Client Sample ID: MW-9
Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0471	U	0.111	0.111	1.00	0.198	pCi/L	12/15/15 12:45	01/06/16 07:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*12/15/15 12:45*	*01/06/16 07:16*	*1*

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.218**		0.128	0.129	1.00	0.171	pCi/L	12/15/15 12:45	01/06/16 07:17	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.5		40 - 110	12/15/15 12:45	01/06/16 07:17	1

Client Sample ID: MW-8D — **Lab Sample ID: 280-77744-4**
Date Collected: 12/08/15 13:00 — **Matrix: Water**
Date Received: 12/09/15 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.186		0.124	0.125	1.00	0.176	pCi/L	12/15/15 12:45	01/06/16 07:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		40 - 110	12/15/15 12:45	01/06/16 07:17	1

Client Sample ID: MW-8EB1 — **Lab Sample ID: 280-77744-5**
Date Collected: 12/08/15 13:00 — **Matrix: Water**
Date Received: 12/09/15 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.111	U	0.111	0.112	1.00	0.176	pCi/L	12/15/15 12:45	01/06/16 07:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.9		40 - 110	12/15/15 12:45	01/06/16 07:17	1

Client Sample ID: MW-13 — **Lab Sample ID: 280-77744-6**
Date Collected: 12/09/15 10:00 — **Matrix: Water**
Date Received: 12/09/15 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.255	U	0.185	0.187	1.00	0.285	pCi/L	12/15/15 12:45	01/06/16 07:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	84.9		40 - 110	12/15/15 12:45	01/06/16 07:17	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8 — **Lab Sample ID: 280-77744-1**
Date Collected: 12/08/15 13:00 — **Matrix: Ground Water**
Date Received: 12/09/15 14:00

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.287	U	0.372	0.373	1.00	0.618	pCi/L	12/15/15 16:20	01/05/16 17:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.7		40 - 110	12/15/15 16:20	01/05/16 17:07	1
Y Carrier	77.4		40 - 110	12/15/15 16:20	01/05/16 17:07	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-9
Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.383	U	0.264	0.267	1.00	0.410	pCi/L	12/15/15 16:20	01/05/16 13:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*
Y Carrier	*81.5*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.372	U	0.251	0.253	1.00	0.388	pCi/L	12/15/15 16:20	01/05/16 13:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.5*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*
Y Carrier	*84.5*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*

Client Sample ID: MW-8D
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.304	U	0.266	0.268	1.00	0.426	pCi/L	12/15/15 16:20	01/05/16 13:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.8*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*
Y Carrier	*69.2*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*

Client Sample ID: MW-8EB1
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.102	U	0.255	0.255	1.00	0.438	pCi/L	12/15/15 16:20	01/05/16 13:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.9*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*
Y Carrier	*75.1*		*40 - 110*	*12/15/15 16:20*	*01/05/16 13:40*	*1*

Client Sample ID: MW-13
Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.377	U	0.293	0.296	1.00	0.464	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	84.9		40 - 110	12/15/15 16:20	01/05/16 13:44	1
Y Carrier	72.9		40 - 110	12/15/15 16:20	01/05/16 13:44	1

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

Client Sample ID: MW-8
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.551	U	0.399	0.401	5.00	0.618	pCi/L		01/07/16 18:07	1

Client Sample ID: MW-9
Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.430**		0.287	0.289	5.00	0.410	pCi/L		01/07/16 18:07	1

Client Sample ID: MW-10
Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.590**		0.281	0.284	5.00	0.388	pCi/L		01/07/16 18:07	1

Client Sample ID: MW-8D
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.490**		0.294	0.296	5.00	0.426	pCi/L		01/07/16 18:07	1

Client Sample ID: MW-8EB1
Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.214	U	0.278	0.278	5.00	0.438	pCi/L		01/07/16 18:07	1

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

TestAmerica Job ID: 280-77744-1

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

Client Sample ID: MW-13
Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.632		0.347	0.350	5.00	0.464	pCi/L		01/07/16 18:07	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-210890/1-A
Matrix: Water
Analysis Batch: 211279

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		12/15/15 11:56	12/16/15 09:59	1
Arsenic	ND		0.0050	0.00049	mg/L		12/15/15 11:56	12/16/15 09:59	1
Barium	ND		0.0050	0.0011	mg/L		12/15/15 11:56	12/16/15 09:59	1
Beryllium	ND		0.0010	0.000053	mg/L		12/15/15 11:56	12/16/15 09:59	1
Cadmium	ND		0.0010	0.000061	mg/L		12/15/15 11:56	12/16/15 09:59	1
Calcium	ND		1.0	0.24	mg/L		12/15/15 11:56	12/16/15 09:59	1
Chromium	ND		0.0020	0.00060	mg/L		12/15/15 11:56	12/16/15 09:59	1
Cobalt	ND		0.0010	0.000021	mg/L		12/15/15 11:56	12/16/15 09:59	1
Lead	ND		0.0010	0.00011	mg/L		12/15/15 11:56	12/16/15 09:59	1
Lithium	ND		0.0080	0.00029	mg/L		12/15/15 11:56	12/16/15 09:59	1
Molybdenum	ND		0.010	0.00023	mg/L		12/15/15 11:56	12/16/15 09:59	1
Selenium	ND		0.0050	0.00025	mg/L		12/15/15 11:56	12/16/15 09:59	1
Thallium	ND		0.0010	0.000074	mg/L		12/15/15 11:56	12/16/15 09:59	1

Lab Sample ID: MB 240-210890/1-A
Matrix: Water
Analysis Batch: 211893

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020	0.011	mg/L		12/15/15 11:56	12/21/15 14:56	1

Lab Sample ID: LCS 240-210890/2-A
Matrix: Water
Analysis Batch: 211279

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0983		mg/L		98	80 - 120
Arsenic	1.00	0.967		mg/L		97	80 - 120
Barium	1.00	0.978		mg/L		98	80 - 120
Beryllium	1.00	0.997		mg/L		100	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Calcium	10.0	10.8		mg/L		108	80 - 120
Chromium	1.00	0.974		mg/L		97	80 - 120
Cobalt	1.00	0.995		mg/L		100	80 - 120
Lead	1.00	0.986		mg/L		99	80 - 120
Lithium	0.100	0.0993		mg/L		99	80 - 120
Molybdenum	0.100	0.0976		mg/L		98	80 - 120
Selenium	1.00	0.981		mg/L		98	80 - 120
Thallium	0.250	0.246		mg/L		99	80 - 120

Lab Sample ID: LCS 240-210890/2-A
Matrix: Water
Analysis Batch: 211893

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 210890

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

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

Lab Sample ID: 280-77744-1 MS
Matrix: Ground Water
Analysis Batch: 211279

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.00055	J	0.100	0.0975		mg/L		97	75 - 125
Arsenic	0.0017	J	1.00	0.993		mg/L		99	75 - 125
Barium	0.033		1.00	1.00		mg/L		97	75 - 125
Beryllium	0.00029	J	1.00	1.06		mg/L		106	75 - 125
Cadmium	0.0013		1.00	0.939		mg/L		94	75 - 125
Calcium	350		10.0	371	4	mg/L		164	75 - 125
Chromium	ND		1.00	0.942		mg/L		94	75 - 125
Cobalt	0.0044		1.00	0.933		mg/L		93	75 - 125
Lead	0.00016	J	1.00	0.919		mg/L		92	75 - 125
Lithium	0.10		0.100	0.192		mg/L		91	75 - 125
Molybdenum	0.15		0.100	0.248		mg/L		102	75 - 125
Selenium	0.021		1.00	1.03		mg/L		101	75 - 125
Thallium	0.00020	J	0.250	0.231		mg/L		92	75 - 125

Lab Sample ID: 280-77744-1 MS
Matrix: Ground Water
Analysis Batch: 211893

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	4.4		0.100	4.53	4	mg/L		107	75 - 125

Lab Sample ID: 280-77744-1 MSD
Matrix: Ground Water
Analysis Batch: 211279

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.00055	J	0.100	0.0963		mg/L		96	75 - 125	1	20
Arsenic	0.0017	J	1.00	0.972		mg/L		97	75 - 125	2	20
Barium	0.033		1.00	0.990		mg/L		96	75 - 125	1	20
Beryllium	0.00029	J	1.00	1.04		mg/L		104	75 - 125	2	20
Cadmium	0.0013		1.00	0.930		mg/L		93	75 - 125	1	20
Calcium	350		10.0	363	4	mg/L		83	75 - 125	2	20
Chromium	ND		1.00	0.924		mg/L		92	75 - 125	2	20
Cobalt	0.0044		1.00	0.917		mg/L		91	75 - 125	2	20
Lead	0.00016	J	1.00	0.917		mg/L		92	75 - 125	0	20
Lithium	0.10		0.100	0.188		mg/L		87	75 - 125	2	20
Molybdenum	0.15		0.100	0.246		mg/L		99	75 - 125	1	20
Selenium	0.021		1.00	0.995		mg/L		97	75 - 125	3	20
Thallium	0.00020	J	0.250	0.232		mg/L		93	75 - 125	0	20

Lab Sample ID: 280-77744-1 MSD
Matrix: Ground Water
Analysis Batch: 211893

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 210890

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	4.4		0.100	4.68	4	mg/L		252	75 - 125	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-307627/1-A
Matrix: Water
Analysis Batch: 307937

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 307627

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 15:52	1

Lab Sample ID: LCS 280-307627/2-A
Matrix: Water
Analysis Batch: 307937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 307627

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.74		ug/L		95	84 - 120

Lab Sample ID: LCSD 280-307627/3-A
Matrix: Water
Analysis Batch: 307937

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 307627

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	5.00	4.75		ug/L		95	84 - 120	0	15

Lab Sample ID: 280-77744-1 MS
Matrix: Ground Water
Analysis Batch: 307937

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 307627

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		5.00	4.60		ug/L		92	75 - 125

Lab Sample ID: 280-77744-1 MSD
Matrix: Ground Water
Analysis Batch: 307937

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 307627

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		5.00	4.53		ug/L		91	75 - 125	2	20

Method: 9040B - pH

Lab Sample ID: LCS 280-307538/27
Matrix: Water
Analysis Batch: 307538

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	7.060		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-308910/6
Matrix: Water
Analysis Batch: 308910

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/24/15 10:29	1
Fluoride	ND		0.50	0.060	mg/L			12/24/15 10:29	1
Sulfate	ND		5.0	0.23	mg/L			12/24/15 10:29	1

Lab Sample ID: LCS 280-308910/4
Matrix: Water
Analysis Batch: 308910

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	100		mg/L		100	90 - 110		
Fluoride			5.00	5.13		mg/L		103	90 - 110		
Sulfate			100	100		mg/L		100	90 - 110		

Lab Sample ID: LCSD 280-308910/5
Matrix: Water
Analysis Batch: 308910

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

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

Lab Sample ID: MRL 280-308910/3
Matrix: Water
Analysis Batch: 308910

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

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			2.50	2.50	J	mg/L		100	50 - 150		
Fluoride			0.200	0.114	J	mg/L		57	50 - 150		
Sulfate			2.50	2.50	J	mg/L		100	50 - 150		

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

Lab Sample ID: MB 280-307521/1
Matrix: Water
Analysis Batch: 307521

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/11/15 16:44	1

Lab Sample ID: LCS 280-307521/2
Matrix: Water
Analysis Batch: 307521

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	498		mg/L		100	86 - 110		

Lab Sample ID: 280-77744-1 DU
Matrix: Ground Water
Analysis Batch: 307521

Client Sample ID: MW-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	3000			2990		mg/L				1	10

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

Lab Sample ID: MB 280-307699/1
Matrix: Water
Analysis Batch: 307699

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/14/15 12:31	1

Lab Sample ID: LCS 280-307699/2
Matrix: Water
Analysis Batch: 307699

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	102		mg/L		102	86 - 114		

Lab Sample ID: 280-77744-1 DU
Matrix: Ground Water
Analysis Batch: 307699

Client Sample ID: MW-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	1.6	J		3.60	J F5	mg/L				77	10

Lab Sample ID: MB 280-307982/2
Matrix: Water
Analysis Batch: 307982

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/16/15 15:32	1

Lab Sample ID: LCS 280-307982/1
Matrix: Water
Analysis Batch: 307982

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	93.6		mg/L		94	86 - 114		

Lab Sample ID: 280-77744-6 DU
Matrix: Water
Analysis Batch: 307982

Client Sample ID: MW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	3.2	J		3.20	J	mg/L				0	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-227452/1-A
Matrix: Water
Analysis Batch: 230860

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

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*

Metals

Prep Batch: 210890

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total Recoverable	Ground Water	3005A	
280-77744-1 MS	MW-8	Total Recoverable	Ground Water	3005A	
280-77744-1 MSD	MW-8	Total Recoverable	Ground Water	3005A	
280-77744-2	MW-9	Total Recoverable	Ground Water	3005A	
280-77744-3	MW-10	Total Recoverable	Ground Water	3005A	
280-77744-4	MW-8D	Total Recoverable	Water	3005A	
280-77744-5	MW-8EB1	Total Recoverable	Water	3005A	
280-77744-6	MW-13	Total Recoverable	Water	3005A	
LCS 240-210890/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-210890/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 211279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total Recoverable	Ground Water	6020A	210890
280-77744-1 MS	MW-8	Total Recoverable	Ground Water	6020A	210890
280-77744-1 MSD	MW-8	Total Recoverable	Ground Water	6020A	210890
280-77744-2	MW-9	Total Recoverable	Ground Water	6020A	210890
280-77744-3	MW-10	Total Recoverable	Ground Water	6020A	210890
280-77744-4	MW-8D	Total Recoverable	Water	6020A	210890
280-77744-5	MW-8EB1	Total Recoverable	Water	6020A	210890
280-77744-6	MW-13	Total Recoverable	Water	6020A	210890
LCS 240-210890/2-A	Lab Control Sample	Total Recoverable	Water	6020A	210890
MB 240-210890/1-A	Method Blank	Total Recoverable	Water	6020A	210890

Analysis Batch: 211893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total Recoverable	Ground Water	6020A	210890
280-77744-1 MS	MW-8	Total Recoverable	Ground Water	6020A	210890
280-77744-1 MSD	MW-8	Total Recoverable	Ground Water	6020A	210890
280-77744-2	MW-9	Total Recoverable	Ground Water	6020A	210890
280-77744-3	MW-10	Total Recoverable	Ground Water	6020A	210890
280-77744-4	MW-8D	Total Recoverable	Water	6020A	210890
280-77744-5	MW-8EB1	Total Recoverable	Water	6020A	210890
280-77744-6	MW-13	Total Recoverable	Water	6020A	210890
LCS 240-210890/2-A	Lab Control Sample	Total Recoverable	Water	6020A	210890
MB 240-210890/1-A	Method Blank	Total Recoverable	Water	6020A	210890

Prep Batch: 307627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	7470A	
280-77744-1 MS	MW-8	Total/NA	Ground Water	7470A	
280-77744-1 MSD	MW-8	Total/NA	Ground Water	7470A	
280-77744-2	MW-9	Total/NA	Ground Water	7470A	
280-77744-3	MW-10	Total/NA	Ground Water	7470A	
280-77744-4	MW-8D	Total/NA	Water	7470A	
280-77744-5	MW-8EB1	Total/NA	Water	7470A	
280-77744-6	MW-13	Total/NA	Water	7470A	
LCS 280-307627/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-307627/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	
MB 280-307627/1-A	Method Blank	Total/NA	Water	7470A	

Metals (Continued)

Analysis Batch: 307937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	7470A	307627
280-77744-1 MS	MW-8	Total/NA	Ground Water	7470A	307627
280-77744-1 MSD	MW-8	Total/NA	Ground Water	7470A	307627
280-77744-2	MW-9	Total/NA	Ground Water	7470A	307627
280-77744-3	MW-10	Total/NA	Ground Water	7470A	307627
280-77744-4	MW-8D	Total/NA	Water	7470A	307627
280-77744-5	MW-8EB1	Total/NA	Water	7470A	307627
280-77744-6	MW-13	Total/NA	Water	7470A	307627
LCS 280-307627/2-A	Lab Control Sample	Total/NA	Water	7470A	307627
LCSD 280-307627/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	307627
MB 280-307627/1-A	Method Blank	Total/NA	Water	7470A	307627

General Chemistry

Analysis Batch: 307521

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	SM 2540C	
280-77744-1 DU	MW-8	Total/NA	Ground Water	SM 2540C	
280-77744-2	MW-9	Total/NA	Ground Water	SM 2540C	
280-77744-3	MW-10	Total/NA	Ground Water	SM 2540C	
280-77744-4	MW-8D	Total/NA	Water	SM 2540C	
280-77744-5	MW-8EB1	Total/NA	Water	SM 2540C	
280-77744-6	MW-13	Total/NA	Water	SM 2540C	
LCS 280-307521/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-307521/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 307538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	9040B	
280-77744-2	MW-9	Total/NA	Ground Water	9040B	
280-77744-3	MW-10	Total/NA	Ground Water	9040B	
280-77744-4	MW-8D	Total/NA	Water	9040B	
280-77744-5	MW-8EB1	Total/NA	Water	9040B	
280-77744-6	MW-13	Total/NA	Water	9040B	
LCS 280-307538/27	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 307699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	SM 2540D	
280-77744-1 DU	MW-8	Total/NA	Ground Water	SM 2540D	
280-77744-2	MW-9	Total/NA	Ground Water	SM 2540D	
280-77744-3	MW-10	Total/NA	Ground Water	SM 2540D	
280-77744-4	MW-8D	Total/NA	Water	SM 2540D	
280-77744-5	MW-8EB1	Total/NA	Water	SM 2540D	
LCS 280-307699/2	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-307699/1	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 307982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-6	MW-13	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 307982 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-6 DU	MW-13	Total/NA	Water	SM 2540D	
LCS 280-307982/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-307982/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 308910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	9056A	
280-77744-1	MW-8	Total/NA	Ground Water	9056A	
280-77744-2	MW-9	Total/NA	Ground Water	9056A	
280-77744-2	MW-9	Total/NA	Ground Water	9056A	
280-77744-3	MW-10	Total/NA	Ground Water	9056A	
280-77744-3	MW-10	Total/NA	Ground Water	9056A	
280-77744-4	MW-8D	Total/NA	Water	9056A	
280-77744-4	MW-8D	Total/NA	Water	9056A	
280-77744-5	MW-8EB1	Total/NA	Water	9056A	
280-77744-6	MW-13	Total/NA	Water	9056A	
280-77744-6	MW-13	Total/NA	Water	9056A	
LCS 280-308910/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-308910/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-308910/6	Method Blank	Total/NA	Water	9056A	
MRL 280-308910/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 227452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77744-1	MW-8	Total/NA	Ground Water	PrecSep-21	
280-77744-2	MW-9	Total/NA	Ground Water	PrecSep-21	
280-77744-3	MW-10	Total/NA	Ground Water	PrecSep-21	
280-77744-4	MW-8D	Total/NA	Water	PrecSep-21	
280-77744-5	MW-8EB1	Total/NA	Water	PrecSep-21	
280-77744-6	MW-13	Total/NA	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
280-77744-1	MW-8	Total/NA	Ground Water	PrecSep_0	
280-77744-2	MW-9	Total/NA	Ground Water	PrecSep_0	
280-77744-3	MW-10	Total/NA	Ground Water	PrecSep_0	
280-77744-4	MW-8D	Total/NA	Water	PrecSep_0	
280-77744-5	MW-8EB1	Total/NA	Water	PrecSep_0	
280-77744-6	MW-13	Total/NA	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	

Client Sample ID: MW-8

Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-1
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	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 10:06	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	211893	12/21/15 15:04	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307627	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 16:10	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307538	12/11/15 23:32	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308910	12/24/15 23:41	CML	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	308910	12/24/15 23:58	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	307521	12/11/15 16:44	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307699	12/14/15 12:31	CML	TAL DEN
Total/NA	Prep	PrecSep-21			999.55 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	999.55 mL		230860	01/06/16 07:16	MFM	TAL SL
Total/NA	Prep	PrecSep_0			999.55 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	999.55 mL		230350	01/05/16 17:07	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Client Sample ID: MW-9

Date Collected: 12/08/15 15:06
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-2
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	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 10:26	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	211893	12/21/15 15:20	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307627	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 16:17	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307538	12/11/15 23:18	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308910	12/25/15 00:51	CML	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	308910	12/25/15 01:09	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	307521	12/11/15 16:44	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307699	12/14/15 12:31	CML	TAL DEN
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	1000.00 mL		230860	01/06/16 07:16	MFM	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	1000.00 mL		230350	01/05/16 13:40	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 - Cherokee

TestAmerica Job ID: 280-77744-1

Client Sample ID: MW-10

Date Collected: 12/08/15 08:55
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-3
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	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 10:30	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		10	50 mL	50 mL	211893	12/21/15 15:24	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307627	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 16:20	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307538	12/11/15 23:28	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308910	12/25/15 01:27	CML	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	308910	12/25/15 01:45	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	307521	12/11/15 16:44	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307699	12/14/15 12:31	CML	TAL DEN
Total/NA	Prep	PrecSep-21			952.74 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	952.74 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			952.74 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	952.74 mL		230350	01/05/16 13:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Client Sample ID: MW-8D

Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-4
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	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 10:34	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	211893	12/21/15 15:28	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307627	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 16:22	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307538	12/11/15 23:23	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308910	12/25/15 02:02	CML	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	308910	12/25/15 02:20	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	307521	12/11/15 16:44	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307699	12/14/15 12:31	CML	TAL DEN
Total/NA	Prep	PrecSep-21			999.87 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	999.87 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			999.87 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	999.87 mL		230350	01/05/16 13:40	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 - Cherokee

TestAmerica Job ID: 280-77744-1

Client Sample ID: MW-8EB1

Date Collected: 12/08/15 13:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-5
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	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 10:46	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211893	12/21/15 15:32	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307627	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 16:24	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307538	12/11/15 23:07	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308910	12/25/15 02:38	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	307521	12/11/15 16:44	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307699	12/14/15 12:31	CML	TAL DEN
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	1000.26 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	1000.26 mL		230350	01/05/16 13:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			231188	01/07/16 18:07	RTM	TAL SL

Client Sample ID: MW-13

Date Collected: 12/09/15 10:00
Date Received: 12/09/15 14:00

Lab Sample ID: 280-77744-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211279	12/16/15 10:50	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	210890	12/15/15 11:56	WAL	TAL CAN
Total Recoverable	Analysis	6020A		5	50 mL	50 mL	211893	12/21/15 15:44	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307627	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 16:27	CDH	TAL DEN
Total/NA	Analysis	9040B		1			307538	12/11/15 23:12	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308910	12/25/15 02:55	CML	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	308910	12/25/15 03:13	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	307521	12/11/15 16:44	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	307982	12/16/15 15:32	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	227452	12/15/15 12:45	CMT	TAL SL
Total/NA	Analysis	9315		1	1000.31 mL		230860	01/06/16 07:17	MFM	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	227493	12/15/15 16:20	CMT	TAL SL
Total/NA	Analysis	9320		1	1000.31 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

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 - Cherokee

TestAmerica Job ID: 280-77744-1

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 - Cherokee

TestAmerica Job ID: 280-77744-1

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

280-77744 Chain of Custody

TestAmerica
THE LEADER in ENVIRONMENTAL TESTING

Client Information	Sampler: Greg Kelly	Lab PM: Kupper, Stephanie K	COC No:
Client Contact: Anna Lundin	Phone: 720 883 7275	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 - Cherokee	Project #: 28014371		
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-7~~ GK 12/9/15				Water		N							
MW-8				Water	N	N	✓	✓	✓	✓	✓	7	refer to PROJECT SETUP
MW-9				Water	N	N	✓	✓	✓	✓	✓	7	
MW-10				Water	N	N	✓	✓	✓	✓	✓	7	
~~Field Duplicate~~ GK 12/9/15 MW-8D				Water	N	N	✓	✓	✓	✓	✓	7	
~~Equipment Blank~~ GK 12/9/15 MW-8EB1				Water	N	N	✓	✓	✓	✓	✓	7	
MW-13				Water	N	N	✓	✓	✓	✓	✓	7	
		GK 12/9/15											

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: refer to project setup

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

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Tara Kent	12/9/15 1400	HDR	[signature]	12/9/15 1400	TAS
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:
		4.8, 5.4 +0.0 IR#7 DW 12/9/15

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: 280-333209.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-77744-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 12/31/2015			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee Station	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - 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:

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)	Ra226_Ra228/ Ra-226/Ra-228 Calc - 3/3 - SUB	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-8 (280-77744-1)	12/8/15	13:00 Mountain		Water			X	X	X	2	
MW-9 (280-77744-2)	12/8/15	15:06 Mountain		Water			X	X	X	2	
MW-10 (280-77744-3)	12/8/15	08:55 Mountain		Water			X	X	X	2	
MW-8D (280-77744-4)	12/8/15	13:00 Mountain		Water			X	X	X	2	
MW-8EB1 (280-77744-5)	12/8/15	13:00 Mountain		Water			X	X	X	2	
MW-13 (280-77744-6)	12/9/15	10:00 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
1		12/11/15 @1445	TAD		12/12/15 09a	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

1/11/2016

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CUR Form #: 3 8 9

Job #(s): _____

CONDITION UPON RECEIPT FORM

Client: TA Denver

Quote No: _____

COC/RFA No: _____

Initiated By: MD Date: 12/2/15 Time: 0900

Shipping Information

Shipper: (FedEx) UPS DHL Courier Client Other: _____ Multiple Packages: Y (N)

Shipping # (s):*

1. 4559 1460 4580
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Sample Temperature (s):**

1. 2.1 (4)
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y (N) N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	Y N (N/A)	Containers for C-14, H-3 & I-129/131 marked with "Do Not Preserve" label?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	(Y) N	Sample received in proper containers?
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	(Y) N	Is sample volume sufficient for analysis?	14.	(Y) N N/A	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease and soils.

Notes:

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

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

J. 3/CJD

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: 280-333215.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Analysis Requested		Job #: 280-77744-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 12/30/2015			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee Station	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - 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 - 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 14 Metals (Includes B and Ca) - 1/2 -SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						CL70 ~~502~~
MW-8 (280-77744-1)	12/8/15	13:00 Mountain		Water			X	1	Use Collision Cell
MW-9 (280-77744-2)	12/8/15	15:06 Mountain		Water			X	1	Use Collision Cell
MW-10 (280-77744-3)	12/8/15	08:55 Mountain		Water			X	1	Use Collision Cell
MW-8D (280-77744-4)	12/8/15	13:00 Mountain		Water			X	1	Use Collision Cell
MW-8EB1 (280-77744-5)	12/8/15	13:00 Mountain		Water			X	1	Use Collision Cell
MW-13 (280-77744-6)	12/9/15	10:00 Mountain		Water			X	1	Use Collision Cell

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)	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	12/11/15 @ 1445	TAD	[signature]	12-12-15 930	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

1/11/2016

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client Denver Site Name _____

Cooler unpacked by:

Cooler Received on 12-12-15 Opened on 12-14-15

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. _____ °C Corrected Cooler Temp. _____ °C

IR GUN# 48 (CF -0.3 °C) Observed Cooler Temp. 2.3 °C Corrected Cooler Temp. 2.0 °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: 280-77744-1

Login Number: 77744
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.	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.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time.	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: 280-77744-1

Login Number: 77744
List Number: 2
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 12/14/15 11:44 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	2.1
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.	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 - Cherokee

TestAmerica Job ID: 280-77744-1

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)
280-77744-1	MW-8	90.7
280-77744-2	MW-9	83.5
280-77744-3	MW-10	92.5

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)
280-77744-4	MW-8D	92.8
280-77744-5	MW-8EB1	93.9
280-77744-6	MW-13	84.9
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)
280-77744-1	MW-8	90.7	77.4
280-77744-2	MW-9	83.5	81.5
280-77744-3	MW-10	92.5	84.5

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)
280-77744-4	MW-8D	92.8	69.2
280-77744-5	MW-8EB1	93.9	75.1
280-77744-6	MW-13	84.9	72.9
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

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-77744-1

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: 280-77947-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Authorized for release by:
1/19/2016 10:51:24 AM

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

TestAmerica Job ID: 280-77947-1

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

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 280-77947-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-77947-1

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

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

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

RECEIPT

The sample was received on 12/11/2015 at 1:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.1º C.

TOTAL RECOVERABLE METALS (ICPMS)

Sample MW-7 (280-77947-1) was analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 12/17/2015 and 12/21/2015 and analyzed on 12/18/2015, 12/22/2015, 12/23/2015 and 12/29/2015.

Beryllium and Cobalt were detected in method blank MB 240-211228/1-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 high for the MSD of sample 280-77926-1 in batch 240-211721. 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.

Boron failed the recovery criteria low for the MS of sample 280-77926-1 in batch 240-212003. Boron failed the recovery criteria high for the MSD of sample 280-77926-1 in batch 240-212003. 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.

Sample MW-7 (280-77947-1)[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

Sample MW-7 (280-77947-1) was analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 12/15/2015.

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

TOTAL DISSOLVED SOLIDS

Sample MW-7 (280-77947-1) was analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 12/15/2015.

Job ID: 280-77947-1 (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
Sample MW-7 (280-77947-1) was analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 12/18/2015.

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

CORROSIVITY (PH)
Sample MW-7 (280-77947-1) was analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 12/16/2015.

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

ANIONS (28 DAYS)
Sample MW-7 (280-77947-1) was analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/28/2015 and 12/29/2015.

Sample MW-7 (280-77947-1)[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.

RADIUM-226 (GFPC)
Sample MW-7 (280-77947-1) was analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 12/21/2015 and analyzed on 01/12/2016.

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

RADIUM-228
Sample MW-7 (280-77947-1) was analyzed for Radium-228 in accordance with 9320. The samples were prepared on 12/21/2015 and analyzed on 12/24/2015.

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

RADIUM-226/RADIUM-228 (GFPC)
Sample MW-7 (280-77947-1) was analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 01/18/2016.

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 - Cherokee

TestAmerica Job ID: 280-77947-1

Client Sample ID: MW-7

Lab Sample ID: 280-77947-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00033	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0013	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.058		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00013	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	1.3		0.40	0.22	mg/L	20		6020A	Total Recoverable
Cadmium	0.00011	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	190		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.0018	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00028	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00039	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.044		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0078	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0094		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.66	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	23.3	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	490		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	450		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1800		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		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 - Cherokee

TestAmerica Job ID: 280-77947-1

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 - Cherokee

TestAmerica Job ID: 280-77947-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-77947-1	MW-7	Ground Water	12/11/15 08:20	12/11/15 13:30

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

Client Sample ID: MW-7
Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00033	J	0.0020	0.00016	mg/L		12/17/15 07:43	12/18/15 15:47	1
Arsenic	0.0013	J	0.0050	0.00049	mg/L		12/21/15 10:26	12/23/15 13:12	1
Barium	0.058		0.0050	0.0011	mg/L		12/17/15 07:43	12/18/15 15:47	1
Beryllium	0.00013	J B	0.0010	0.000053	mg/L		12/17/15 07:43	12/18/15 15:47	1
Boron	1.3		0.40	0.22	mg/L		12/21/15 10:26	12/22/15 13:16	20
Cadmium	0.00011	J	0.0010	0.000061	mg/L		12/17/15 07:43	12/18/15 15:47	1
Calcium	190		1.0	0.24	mg/L		12/17/15 07:43	12/18/15 15:47	1
Chromium	0.0018	J	0.0020	0.00060	mg/L		12/17/15 07:43	12/18/15 15:47	1
Cobalt	0.00028	J B	0.0010	0.000021	mg/L		12/17/15 07:43	12/18/15 15:47	1
Lead	0.00039	J	0.0010	0.00011	mg/L		12/17/15 07:43	12/18/15 15:47	1
Lithium	0.044		0.0080	0.00029	mg/L		12/21/15 10:26	12/29/15 13:45	1
Molybdenum	0.0078	J	0.010	0.00023	mg/L		12/21/15 10:26	12/23/15 13:12	1
Selenium	0.0094		0.0050	0.00025	mg/L		12/17/15 07:43	12/18/15 15:47	1
Thallium	ND		0.0010	0.000074	mg/L		12/17/15 07:43	12/18/15 15:47	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 14:36	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.66	HF	0.100	0.100	SU			12/16/15 23:32	1
Temperature	23.3	HF	1.00	1.00	Degrees C			12/16/15 23:32	1
Chloride	490		15	1.3	mg/L			12/29/15 19:18	5
Fluoride	1.1		0.50	0.060	mg/L			12/28/15 18:17	1
Sulfate	450		25	1.2	mg/L			12/29/15 19:18	5
Total Dissolved Solids (TDS)	1800		10	4.7	mg/L			12/15/15 18:52	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			12/18/15 16:23	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.294		0.0792	0.0835	1.00	0.0716	pCi/L	12/21/15 15:19	01/12/16 07:05	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.9*		*40 - 110*	*12/21/15 15:19*	*01/12/16 07:05*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.408	U	0.289	0.291	1.00	0.451	pCi/L	12/21/15 15:19	12/24/15 18:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.9*		*40 - 110*	*12/21/15 15:19*	*12/24/15 18:29*	*1*
Y Carrier	*92.3*		*40 - 110*	*12/21/15 15:19*	*12/24/15 18:29*	*1*

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

Client Sample ID: MW-7
Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.702**		0.299	0.303	5.00	0.451	pCi/L		01/18/16 21:10	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-211228/1-A
Matrix: Water
Analysis Batch: 211721

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 211228

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		12/17/15 07:43	12/18/15 14:40	1
Barium	ND		0.0050	0.0011	mg/L		12/17/15 07:43	12/18/15 14:40	1
Beryllium	0.0000770	J	0.0010	0.000053	mg/L		12/17/15 07:43	12/18/15 14:40	1
Cadmium	ND		0.0010	0.000061	mg/L		12/17/15 07:43	12/18/15 14:40	1
Calcium	ND		1.0	0.24	mg/L		12/17/15 07:43	12/18/15 14:40	1
Chromium	ND		0.0020	0.00060	mg/L		12/17/15 07:43	12/18/15 14:40	1
Cobalt	0.0000220	J	0.0010	0.000021	mg/L		12/17/15 07:43	12/18/15 14:40	1
Lead	ND		0.0010	0.00011	mg/L		12/17/15 07:43	12/18/15 14:40	1
Selenium	ND		0.0050	0.00025	mg/L		12/17/15 07:43	12/18/15 14:40	1
Thallium	ND		0.0010	0.000074	mg/L		12/17/15 07:43	12/18/15 14:40	1

Lab Sample ID: LCS 240-211228/2-A
Matrix: Water
Analysis Batch: 211721

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 211228

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0826		mg/L		83	80 - 120
Barium	1.00	0.917		mg/L		92	80 - 120
Beryllium	1.00	0.976		mg/L		98	80 - 120
Cadmium	1.00	0.946		mg/L		95	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120
Chromium	1.00	0.907		mg/L		91	80 - 120
Cobalt	1.00	0.963		mg/L		96	80 - 120
Lead	1.00	0.987		mg/L		99	80 - 120
Selenium	1.00	0.911		mg/L		91	80 - 120
Thallium	0.250	0.241		mg/L		96	80 - 120

Lab Sample ID: MB 240-211754/1-A
Matrix: Water
Analysis Batch: 212003

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 211754

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00049	mg/L		12/21/15 10:26	12/22/15 12:10	1
Boron	ND		0.020	0.011	mg/L		12/21/15 10:26	12/22/15 12:10	1
Lithium	ND		0.0080	0.00029	mg/L		12/21/15 10:26	12/22/15 12:10	1
Molybdenum	ND		0.010	0.00023	mg/L		12/21/15 10:26	12/22/15 12:10	1

Lab Sample ID: MB 240-211754/1-A
Matrix: Water
Analysis Batch: 212572

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 211754

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.0080	0.00029	mg/L		12/21/15 10:26	12/29/15 12:41	1

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

Lab Sample ID: LCS 240-211754/2-A
Matrix: Water
Analysis Batch: 212003

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 211754

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.954		mg/L		95	80 - 120
Boron	0.100	0.0969		mg/L		97	80 - 120
Lithium	0.100	0.0975		mg/L		97	80 - 120
Molybdenum	0.100	0.0961		mg/L		96	80 - 120

Lab Sample ID: LCS 240-211754/2-A
Matrix: Water
Analysis Batch: 212572

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 211754

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.100	0.0935		mg/L		93	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-307770/1-A
Matrix: Water
Analysis Batch: 307937

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 307770

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		12/15/15 09:50	12/15/15 14:17	1

Lab Sample ID: LCS 280-307770/2-A
Matrix: Water
Analysis Batch: 307937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 307770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.94		ug/L		99	84 - 120

Lab Sample ID: 280-77947-1 MS
Matrix: Ground Water
Analysis Batch: 307937

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 307770

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		5.00	4.71		ug/L		94	75 - 125

Lab Sample ID: 280-77947-1 MSD
Matrix: Ground Water
Analysis Batch: 307937

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 307770

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		5.00	4.54		ug/L		91	75 - 125	4	20

Method: 9040B - pH

Lab Sample ID: LCS 280-308088/27
Matrix: Water
Analysis Batch: 308088

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	7.050		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-308992/6
Matrix: Water
Analysis Batch: 308992

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/28/15 12:58	1
Fluoride	ND		0.50	0.060	mg/L			12/28/15 12:58	1
Sulfate	ND		5.0	0.23	mg/L			12/28/15 12:58	1

Lab Sample ID: LCS 280-308992/4
Matrix: Water
Analysis Batch: 308992

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	96.9		mg/L		97	90 - 110
Fluoride	5.00	5.10		mg/L		102	90 - 110
Sulfate	100	97.3		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-308992/5
Matrix: Water
Analysis Batch: 308992

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	97.1		mg/L		97	90 - 110	0	10
Fluoride	5.00	5.07		mg/L		101	90 - 110	1	10
Sulfate	100	97.4		mg/L		97	90 - 110	0	10

Lab Sample ID: MRL 280-308992/3
Matrix: Water
Analysis Batch: 308992

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.52	J	mg/L		101	50 - 150
Fluoride	0.200	0.133	J	mg/L		66	50 - 150
Sulfate	2.50	2.60	J	mg/L		104	50 - 150

Lab Sample ID: MB 280-309062/6
Matrix: Water
Analysis Batch: 309062

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/29/15 12:17	1
Sulfate	ND		5.0	0.23	mg/L			12/29/15 12:17	1

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

Lab Sample ID: LCS 280-309062/4
Matrix: Water
Analysis Batch: 309062

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.7		mg/L		99	90 - 110
Sulfate	100	99.1		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-309062/5
Matrix: Water
Analysis Batch: 309062

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.7		mg/L		99	90 - 110	0	10
Sulfate	100	99.2		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-309062/3
Matrix: Water
Analysis Batch: 309062

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.59	J	mg/L		104	50 - 150
Sulfate	2.50	2.71	J	mg/L		109	50 - 150

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

Lab Sample ID: MB 280-307857/1
Matrix: Water
Analysis Batch: 307857

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/15/15 18:52	1

Lab Sample ID: LCS 280-307857/2
Matrix: Water
Analysis Batch: 307857

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

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

Lab Sample ID: 280-77947-1 DU
Matrix: Ground Water
Analysis Batch: 307857

Client Sample ID: MW-7
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	1800		1780		mg/L		0.2	10

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

Lab Sample ID: MB 280-308317/2
Matrix: Water
Analysis Batch: 308317

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/18/15 16:23	1

Lab Sample ID: LCS 280-308317/1
Matrix: Water
Analysis Batch: 308317

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.0		mg/L		92	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-228569/1-A
Matrix: Water
Analysis Batch: 231800

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 228569

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03573	U	0.0337	0.0339	1.00	0.0520	pCi/L	12/21/15 15:19	01/12/16 07:04	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*12/21/15 15:19*	*01/12/16 07:04*	*1*

Lab Sample ID: LCS 160-228569/2-A
Matrix: Water
Analysis Batch: 231800

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 228569

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.2	10.40		1.01	1.00	0.0648	pCi/L	93	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*93.0*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-228567/1-A
Matrix: Water
Analysis Batch: 229532

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 228567

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09709	U	0.218	0.218	1.00	0.373	pCi/L	12/21/15 15:19	12/24/15 18:29	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*12/21/15 15:19*	*12/24/15 18:29*	*1*
Y Carrier	*83.9*		*40 - 110*	*12/21/15 15:19*	*12/24/15 18:29*	*1*

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

Lab Sample ID: LCS 160-228567/2-A
Matrix: Water
Analysis Batch: 229532

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 228567

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			3.18	1.833		0.365	1.00	0.348	pCi/L	58	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*93.0*		*40 - 110*
Y Carrier	*99.3*		*40 - 110*

Metals

Prep Batch: 211228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total Recoverable	Ground Water	3005A	
LCS 240-211228/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-211228/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 211721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total Recoverable	Ground Water	6020A	211228
LCS 240-211228/2-A	Lab Control Sample	Total Recoverable	Water	6020A	211228
MB 240-211228/1-A	Method Blank	Total Recoverable	Water	6020A	211228

Prep Batch: 211754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total Recoverable	Ground Water	3005A	
LCS 240-211754/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-211754/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 212003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total Recoverable	Ground Water	6020A	211754
LCS 240-211754/2-A	Lab Control Sample	Total Recoverable	Water	6020A	211754
MB 240-211754/1-A	Method Blank	Total Recoverable	Water	6020A	211754

Analysis Batch: 212247

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total Recoverable	Ground Water	6020A	211754

Analysis Batch: 212572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total Recoverable	Ground Water	6020A	211754
LCS 240-211754/2-A	Lab Control Sample	Total Recoverable	Water	6020A	211754
MB 240-211754/1-A	Method Blank	Total Recoverable	Water	6020A	211754

Prep Batch: 307770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	7470A	
280-77947-1 MS	MW-7	Total/NA	Ground Water	7470A	
280-77947-1 MSD	MW-7	Total/NA	Ground Water	7470A	
LCS 280-307770/2-A	Lab Control Sample	Total/NA	Water	7470A	
MB 280-307770/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 307937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	7470A	307770
280-77947-1 MS	MW-7	Total/NA	Ground Water	7470A	307770
280-77947-1 MSD	MW-7	Total/NA	Ground Water	7470A	307770
LCS 280-307770/2-A	Lab Control Sample	Total/NA	Water	7470A	307770
MB 280-307770/1-A	Method Blank	Total/NA	Water	7470A	307770

QC Association Summary

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

TestAmerica Job ID: 280-77947-1

General Chemistry

Analysis Batch: 307857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	SM 2540C	
280-77947-1 DU	MW-7	Total/NA	Ground Water	SM 2540C	
LCS 280-307857/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-307857/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 308088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	9040B	
LCS 280-308088/27	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 308317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	SM 2540D	
LCS 280-308317/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-308317/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 308992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	9056A	
LCS 280-308992/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-308992/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-308992/6	Method Blank	Total/NA	Water	9056A	
MRL 280-308992/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 309062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	9056A	
LCS 280-309062/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-309062/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-309062/6	Method Blank	Total/NA	Water	9056A	
MRL 280-309062/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 228567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	PrecSep_0	
LCS 160-228567/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-228567/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 228569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-77947-1	MW-7	Total/NA	Ground Water	PrecSep-21	
LCS 160-228569/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-228569/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Lab Chronicle

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

TestAmerica Job ID: 280-77947-1

Client Sample ID: MW-7

Date Collected: 12/11/15 08:20
Date Received: 12/11/15 13:30

Lab Sample ID: 280-77947-1

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	211228	12/17/15 07:43	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	211721	12/18/15 15:47	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	211754	12/21/15 10:26	WKD	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	212003	12/22/15 13:16	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	211754	12/21/15 10:26	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	212247	12/23/15 13:12	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	211754	12/21/15 10:26	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	212572	12/29/15 13:45	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	307770	12/15/15 09:50	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	307937	12/15/15 14:36	CDH	TAL DEN
Total/NA	Analysis	9040B		1			308088	12/16/15 23:32	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	308992	12/28/15 18:17	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	309062	12/29/15 19:18	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	307857	12/15/15 18:52	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	308317	12/18/15 16:23	MW1	TAL DEN
Total/NA	Prep	PrecSep-21			1000.70 mL	1.0 g	228569	12/21/15 15:19	SCB	TAL SL
Total/NA	Analysis	9315		1	1000.70 mL		231800	01/12/16 07:05	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.70 mL	1.0 g	228567	12/21/15 15:19	SCB	TAL SL
Total/NA	Analysis	9320		1	1000.70 mL		229532	12/24/15 18:29	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			232912	01/18/16 21:10	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 - Cherokee

TestAmerica Job ID: 280-77947-1

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
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	12-31-16
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	03-31-16 *
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
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

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-77947-1

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
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

280-77947 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Greg Kelly	Lab PM: Kupper, Stephanie L	COC No:
Client Contact: Anna Lundin	Phone: 720 883 7275	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:	Analysis Requested
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: 720-633-2380(Tel)	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371	
Site: Colorado	SSOW#:	

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - 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	N	N	D	N	N	D											
MW-7	12/11/15	0820	G	Water	N	N	✓	✓	✓	✓	✓											refer to project setup
MW-8				Water		N																
MW-9				Water		N																
MW-10				Water		N																
Field Duplicate				Water		N																
Equipment Blank				Water		N																

GK 12/11/15

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: see Project Setup

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Greg Kelly	12/11/15 0950	HDR		12/11/15 9:50	HDR
2		12/11/15 1330	HDR		12/11/15 1330	TAD
3						

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

Cooler Temperature(s) °C and Other Remarks: 1.1 IR7 40.0 12/11/15

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: 280-333723.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-77947-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 1/12/2016			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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:

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/ Ra-226/Ra-228 Calc - 3/3 - SUB	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-77947-1)	12/11/15	08:20 Mountain		Water			X	X	X	3	

Page 23 of 28

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:			
Relinquished by:	Date/Time: 12-15-15 15:30	Company JTA	Received by: CW McK	Date/Time: 12/16/15 9:20AM	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:

12/16/2015

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

3,8/C3,5

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: 280-333724.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Analysis Requested		Job #: 280-77947-1

Address: 4101 Shuffel Street NW, ,	Due Date Requested: 1/8/2016
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 - Cherokee	Project #: 28014371
Site: Xcel Energy CCR - Cherokee Station	SSOW#:

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - 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 - 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 14 Metals (Includes B and Ca) - 1/2 -SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7 (280-77947-1)	12/11/15	08:20 Mountain		Water			X	1	Use Collision Cell

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:			
Relinquished by:	Date/Time: 12-15-15 1530	Company TA	Received by: Jacquelyn Kenel	Date/Time: 12/16/15 930	Company TAN C
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
Canton Facility

Login # :

Client TA Denver Site Name

Cooler unpacked by: J. Jenel

Cooler Received on 12/16/15 Opened on 12/16/15

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. °C Corrected Cooler Temp. °C

IR GUN# 48 (CF -0.3 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 3.5 °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	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: 280-77947-1

Login Number: 77947
List Number: 1
Creator: Dedio, Michael 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").	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: 280-77947-1

Login Number: 77947
List Number: 3
Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis
List Creation: 12/16/15 12:53 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1
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.	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 - Cherokee

TestAmerica Job ID: 280-77947-1

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)								
280-77947-1	MW-7	75.9								

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)								
LCS 160-228569/2-A	Lab Control Sample	93.0								
MB 160-228569/1-A	Method Blank	96.2								

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)							
280-77947-1	MW-7	75.9	92.3							

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 160-228567/2-A	Lab Control Sample	93.0	99.3							
MB 160-228567/1-A	Method Blank	96.2	83.9							

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: 280-80273-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Authorized for release by:
3/31/2016 11:23:11 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 - Cherokee

TestAmerica Job ID: 280-80273-1

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

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 280-80273-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-80273-1

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 3/1/2016 at 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 2.7º C and 2.9º C.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 03/07/2016 and analyzed on 03/16/2016, 03/21/2016 and 03/24/2016.

Barium, Beryllium, Calcium and Cobalt were detected in method blank MB 240-220532/1-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 high for the MS of sample 240-61728-2 in batch 240-221601. 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-7 (280-80273-1)[20X], MW-8 (280-80273-2)[50X], MW-9 (280-80273-3)[50X], MW-10 (280-80273-4)[20X], MW-13 (280-80273-5)[20X] and MW-9D (280-80273-6)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Some project-specific reporting limits on the following samples fall below the laboratory's verified standard quantitation limit: MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6), MW-10EB (280-80273-7). The continuing calibration blanks and method blanks may not support the lower RL.

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

TOTAL MERCURY

Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 03/14/2016.

Job ID: 280-80273-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL DISSOLVED SOLIDS
Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 03/02/2016.

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

TOTAL SUSPENDED SOLIDS
Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/02/2016.

The following samples were diluted due to slow filtration and high Total Suspended Solids: MW-7 (280-80273-1). Elevated reporting limits (RLs) are provided.

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

CORROSIVITY (PH)
Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 03/04/2016.

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

ANIONS (28 DAYS)
Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 03/09/2016.

Samples MW-7 (280-80273-1)[10X], MW-8 (280-80273-2)[10X], MW-9 (280-80273-3)[10X], MW-10 (280-80273-4)[10X], MW-13 (280-80273-5)[5X] and MW-9D (280-80273-6)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/08/2016 and analyzed on 03/30/2016.

The following sample was prepared at a reduced aliquot due to sediment and discoloration in the sample: MW-7 (280-80273-1).

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3).

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

RADIUM-228
Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/09/2016 and analyzed on 03/23/2016 and 03/25/2016.

Radium-228 was detected in method blank MB 160-239659/1-A at a level that was above the method detection limit but below the

Job ID: 280-80273-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3).

The following sample was prepared at a reduced aliquot due to sediment and discoloration in the sample: MW-7 (280-80273-1).

The detection goal for Radium-228 was not met for the following samples due to a reduction of the sample size attributed to high residual mass: MW-7 (280-80273-1). Analytical results are reported with the detection limit achieved.

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

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-7 (280-80273-1), MW-8 (280-80273-2), MW-9 (280-80273-3), MW-10 (280-80273-4), MW-13 (280-80273-5), MW-9D (280-80273-6) and MW-10EB (280-80273-7) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 03/30/2016.

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 - Cherokee

TestAmerica Job ID: 280-80273-1

Client Sample ID: MW-7 — Lab Sample ID: 280-80273-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00045	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0030	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.12	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.0010	B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	1.1		0.40	0.22	mg/L	20		6020A	Total Recoverable
Cadmium	0.00051	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	240	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.018		0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.0036	B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.0076		0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.062		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0085	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0081		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
Thallium	0.00030	J	0.0010	0.000074	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.85	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	660		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	0.98		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	470		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1100		40	11	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 280-80273-2

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	0.0015	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.033	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00036	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	2.5		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.0015		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	360	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.00086	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 280-80273-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.0045	B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00035	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.087		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.11		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.70	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	20.3	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	480		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.6		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2900		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	21		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-80273-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0018	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0031	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.061	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00026	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	2.9		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.0031		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	410	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.0029	B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.0033		0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.033		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0069		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.99	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	20.7	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	750		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3200		20	9.4	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-10 — Lab Sample ID: 280-80273-4

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-10 (Continued) — Lab Sample ID: 280-80273-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0025		0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0038	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.074	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00020	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	1.6		0.40	0.22	mg/L	20		6020A	Total Recoverable
Cadmium	0.0013		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	300	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.00068	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.0029	B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00016	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.027		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.011		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	9.16	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	20.1	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	550		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.0		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	870		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2200		20	9.4	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-13 — Lab Sample ID: 280-80273-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00062	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.084	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00012	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	0.86		0.40	0.22	mg/L	20		6020A	Total Recoverable
Calcium	130	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.00025	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0026	J	0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0055		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.87	HF	0.100	0.100	SU	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-13 (Continued) — Lab Sample ID: 280-80273-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	20.8	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	280		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	180		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	1000		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-9D — Lab Sample ID: 280-80273-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0014	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0026	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.054	B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00011	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Boron	3.4		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.0030		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	420	B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.00075	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.0021	B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.0034		0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.034		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0073		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.91	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	690		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1200		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3100		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-10EB — Lab Sample ID: 280-80273-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0047	J B	0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Beryllium	0.00013	J B	0.0010	0.000053	mg/L	1		6020A	Total Recoverable
Calcium	0.99	J B	1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.00091	J	0.0020	0.00060	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 - Cherokee

TestAmerica Job ID: 280-80273-1

Client Sample ID: MW-10EB (Continued)

Lab Sample ID: 280-80273-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.000060	J B	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00024	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.00029	J	0.0080	0.00029	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.59	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	20.2	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	1.1	J	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	2.1	J	5.0	0.23	mg/L	1		9056A	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-80273-1

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 - Cherokee

TestAmerica Job ID: 280-80273-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-80273-1	MW-7	Ground Water	03/01/16 09:15	03/01/16 15:15
280-80273-2	MW-8	Ground Water	02/29/16 15:05	03/01/16 15:15
280-80273-3	MW-9	Ground Water	03/01/16 12:15	03/01/16 15:15
280-80273-4	MW-10	Ground Water	03/01/16 14:00	03/01/16 15:15
280-80273-5	MW-13	Water	02/29/16 12:20	03/01/16 15:15
280-80273-6	MW-9D	Ground Water	03/01/16 12:15	03/01/16 15:15
280-80273-7	MW-10EB	Ground Water	03/01/16 14:30	03/01/16 15:15

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

Client Sample ID: MW-7
Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00045	J	0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:19	1
Arsenic	0.0030	J	0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:19	1
Barium	0.12	B	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:19	1
Beryllium	0.0010	B	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:19	1
Boron	1.1		0.40	0.22	mg/L		03/07/16 13:37	03/24/16 12:33	20
Cadmium	0.00051	J	0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:19	1
Calcium	240	B	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:19	1
Chromium	0.018		0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 15:40	1
Cobalt	0.0036	B	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:19	1
Lead	0.0076		0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:19	1
Lithium	0.062		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:19	1
Molybdenum	0.0085	J	0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:19	1
Selenium	0.0081		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:19	1
Thallium	0.00030	J	0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:19	1

Client Sample ID: MW-8
Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00023	J	0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:23	1
Arsenic	0.0015	J	0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:23	1
Barium	0.033	B	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:23	1
Beryllium	0.00036	J B	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:23	1
Boron	2.5		1.0	0.55	mg/L		03/07/16 13:37	03/24/16 12:37	50
Cadmium	0.0015		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:23	1
Calcium	360	B	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:23	1
Chromium	0.00086	J	0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 15:48	1
Cobalt	0.0045	B	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:23	1
Lead	0.00035	J	0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:23	1
Lithium	0.087		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:23	1
Molybdenum	0.11		0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:23	1
Selenium	0.015		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:23	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:23	1

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0018	J	0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:27	1
Arsenic	0.0031	J	0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:27	1
Barium	0.061	B	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:27	1
Beryllium	0.00026	J B	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:27	1
Boron	2.9		1.0	0.55	mg/L		03/07/16 13:37	03/24/16 12:41	50
Cadmium	0.0031		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:27	1
Calcium	410	B	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:27	1
Chromium	ND		0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 15:56	1
Cobalt	0.0029	B	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:27	1
Lead	0.0033		0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:27	1
Lithium	0.12		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:27	1
Molybdenum	0.033		0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:27	1

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

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	**0.0069**		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:27	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:27	1

Client Sample ID: MW-10
Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0025**		0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:31	1
Arsenic	**0.0038**	**J**	0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:31	1
Barium	**0.074**	**B**	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:31	1
Beryllium	**0.00020**	**J B**	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:31	1
Boron	**1.6**		0.40	0.22	mg/L		03/07/16 13:37	03/24/16 12:45	20
Cadmium	**0.0013**		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:31	1
Calcium	**300**	**B**	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:31	1
Chromium	**0.00068**	**J**	0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 16:05	1
Cobalt	**0.0029**	**B**	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:31	1
Lead	**0.00016**	**J**	0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:31	1
Lithium	**0.11**		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:31	1
Molybdenum	**0.027**		0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:31	1
Selenium	**0.011**		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:31	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:31	1

Client Sample ID: MW-13
Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:35	1
Arsenic	**0.00062**	**J**	0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:35	1
Barium	**0.084**	**B**	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:35	1
Beryllium	**0.00012**	**J B**	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:35	1
Boron	**0.86**		0.40	0.22	mg/L		03/07/16 13:37	03/24/16 13:00	20
Cadmium	ND		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:35	1
Calcium	**130**	**B**	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:35	1
Chromium	ND		0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 16:22	1
Cobalt	**0.00025**	**J B**	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:35	1
Lead	ND		0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:35	1
Lithium	**0.037**		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:35	1
Molybdenum	**0.0026**	**J**	0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:35	1
Selenium	**0.0055**		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:35	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:35	1

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0014**	**J**	0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:40	1
Arsenic	**0.0026**	**J**	0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:40	1
Barium	**0.054**	**B**	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:40	1
Beryllium	**0.00011**	**J B**	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:40	1
Boron	**3.4**		1.0	0.55	mg/L		03/07/16 13:37	03/24/16 12:54	50

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

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.0030**		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:40	1
Calcium	**420**	**B**	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:40	1
Chromium	**0.00075**	**J**	0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 16:30	1
Cobalt	**0.0021**	**B**	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:40	1
Lead	**0.0034**		0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:40	1
Lithium	**0.11**		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:40	1
Molybdenum	**0.034**		0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:40	1
Selenium	**0.0073**		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:40	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:40	1

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:44	1
Arsenic	ND		0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:44	1
Barium	**0.0047**	**J B**	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:44	1
Beryllium	**0.00013**	**J B**	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:44	1
Boron	ND		0.020	0.011	mg/L		03/07/16 13:37	03/24/16 13:13	1
Cadmium	ND		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:44	1
Calcium	**0.99**	**J B**	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:44	1
Chromium	**0.00091**	**J**	0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 16:39	1
Cobalt	**0.000060**	**J B**	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:44	1
Lead	**0.00024**	**J**	0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:44	1
Lithium	**0.00029**	**J**	0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:44	1
Molybdenum	ND		0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:44	1
Selenium	ND		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:44	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:44	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:25	1

Client Sample ID: MW-8
Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:32	1

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:39	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-10
Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:41	1

Client Sample ID: MW-13
Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:43	1

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:46	1

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:48	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.85	HF	0.100	0.100	SU			03/04/16 17:26	1
Temperature	21.2	HF	1.00	1.00	Degrees C			03/04/16 17:26	1
Chloride	660		30	2.5	mg/L			03/09/16 19:11	10
Fluoride	0.98		0.50	0.060	mg/L			03/09/16 18:53	1
Sulfate	470		50	2.3	mg/L			03/09/16 19:11	10
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L			03/02/16 14:47	1
Total Suspended Solids	1100		40	11	mg/L			03/02/16 16:26	1

Client Sample ID: MW-8
Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.70	HF	0.100	0.100	SU			03/04/16 17:15	1
Temperature	20.3	HF	1.00	1.00	Degrees C			03/04/16 17:15	1
Chloride	480		30	2.5	mg/L			03/09/16 20:21	10
Fluoride	1.6		0.50	0.060	mg/L			03/09/16 20:04	1
Sulfate	1400		50	2.3	mg/L			03/09/16 20:21	10
Total Dissolved Solids (TDS)	2900		20	9.4	mg/L			03/02/16 14:47	1
Total Suspended Solids	21		4.0	1.1	mg/L			03/02/16 16:26	1

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.99	HF	0.100	0.100	SU			03/04/16 17:20	1

General Chemistry (Continued)

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	20.7	HF	1.00	1.00	Degrees C			03/04/16 17:20	1
Chloride	750		30	2.5	mg/L			03/09/16 20:57	10
Fluoride	2.1		0.50	0.060	mg/L			03/09/16 20:39	1
Sulfate	1300		50	2.3	mg/L			03/09/16 20:57	10
Total Dissolved Solids (TDS)	3200		20	9.4	mg/L			03/02/16 14:47	1
Total Suspended Solids	17		4.0	1.1	mg/L			03/02/16 16:26	1

Client Sample ID: MW-10
Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	9.16	HF	0.100	0.100	SU			03/04/16 17:07	1
Temperature	20.1	HF	1.00	1.00	Degrees C			03/04/16 17:07	1
Chloride	550		30	2.5	mg/L			03/09/16 21:32	10
Fluoride	2.0		0.50	0.060	mg/L			03/09/16 21:14	1
Sulfate	870		50	2.3	mg/L			03/09/16 21:32	10
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L			03/02/16 14:47	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			03/02/16 16:26	1

Client Sample ID: MW-13
Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.87	HF	0.100	0.100	SU			03/04/16 17:36	1
Temperature	20.8	HF	1.00	1.00	Degrees C			03/04/16 17:36	1
Chloride	280		15	1.3	mg/L			03/09/16 22:08	5
Fluoride	1.1		0.50	0.060	mg/L			03/09/16 21:50	1
Sulfate	180		5.0	0.23	mg/L			03/09/16 21:50	1
Total Dissolved Solids (TDS)	1000		10	4.7	mg/L			03/02/16 14:47	1
Total Suspended Solids	ND		4.0	1.1	mg/L			03/02/16 16:26	1

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.91	HF	0.100	0.100	SU			03/04/16 17:31	1
Temperature	21.1	HF	1.00	1.00	Degrees C			03/04/16 17:31	1
Chloride	690		30	2.5	mg/L			03/09/16 22:43	10
Fluoride	2.1		0.50	0.060	mg/L			03/09/16 22:25	1
Sulfate	1200		50	2.3	mg/L			03/09/16 22:43	10
Total Dissolved Solids (TDS)	3100		20	9.4	mg/L			03/02/16 14:47	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			03/02/16 16:26	1

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.59	HF	0.100	0.100	SU			03/04/16 17:01	1
Temperature	20.2	HF	1.00	1.00	Degrees C			03/04/16 17:01	1
Chloride	1.1	J	3.0	0.25	mg/L			03/09/16 23:36	1

General Chemistry (Continued)

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.060	mg/L			03/09/16 23:36	1
Sulfate	**2.1**	**J**	5.0	0.23	mg/L			03/09/16 23:36	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/02/16 14:47	1
Total Suspended Solids	**2.4**	**J**	4.0	1.1	mg/L			03/02/16 16:26	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**1.13**		0.314	0.330	1.00	0.243	pCi/L	03/08/16 12:46	03/30/16 07:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*03/08/16 12:46*	*03/30/16 07:57*	*1*

Client Sample ID: MW-8
Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0917	U	0.0686	0.0691	1.00	0.105	pCi/L	03/08/16 12:46	03/30/16 07:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.4*		*40 - 110*	*03/08/16 12:46*	*03/30/16 07:57*	*1*

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.200**		0.0662	0.0686	1.00	0.0659	pCi/L	03/08/16 12:46	03/30/16 07:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*03/08/16 12:46*	*03/30/16 07:58*	*1*

Client Sample ID: MW-10
Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.121**		0.0628	0.0638	1.00	0.0776	pCi/L	03/08/16 13:37	03/30/16 07:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*03/08/16 13:37*	*03/30/16 07:31*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-13
Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.283**		0.0954	0.0987	1.00	0.112	pCi/L	03/08/16 13:37	03/30/16 07:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/08/16 13:37*	*03/30/16 07:31*	*1*

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.212**		0.0762	0.0785	1.00	0.0798	pCi/L	03/08/16 13:37	03/30/16 07:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/08/16 13:37*	*03/30/16 07:32*	*1*

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0230	U	0.0612	0.0612	1.00	0.109	pCi/L	03/08/16 13:37	03/30/16 07:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/08/16 13:37*	*03/30/16 07:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.69**	**G**	1.01	1.02	1.00	1.51	pCi/L	03/09/16 08:31	03/23/16 12:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*03/09/16 08:31*	*03/23/16 12:17*	*1*
Y Carrier	*84.9*		*40 - 110*	*03/09/16 08:31*	*03/23/16 12:17*	*1*

Client Sample ID: MW-8
Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.408	U	0.274	0.276	1.00	0.426	pCi/L	03/09/16 08:31	03/23/16 12:17	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		40 - 110	03/09/16 08:31	03/23/16 12:17	1
Y Carrier	77.8		40 - 110	03/09/16 08:31	03/23/16 12:17	1

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.602		0.239	0.245	1.00	0.333	pCi/L	03/09/16 08:31	03/23/16 12:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	03/09/16 08:31	03/23/16 12:17	1
Y Carrier	83.4		40 - 110	03/09/16 08:31	03/23/16 12:17	1

Client Sample ID: MW-10
Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.04		0.309	0.324	1.00	0.397	pCi/L	03/09/16 08:29	03/25/16 12:31	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	03/09/16 08:29	03/25/16 12:31	1
Y Carrier	82.6		40 - 110	03/09/16 08:29	03/25/16 12:31	1

Client Sample ID: MW-13
Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.631		0.241	0.248	1.00	0.329	pCi/L	03/09/16 08:29	03/25/16 12:31	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	03/09/16 08:29	03/25/16 12:31	1
Y Carrier	87.5		40 - 110	03/09/16 08:29	03/25/16 12:31	1

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.612		0.234	0.241	1.00	0.324	pCi/L	03/09/16 08:29	03/25/16 12:31	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	03/09/16 08:29	03/25/16 12:31	1
Y Carrier	92.3		40 - 110	03/09/16 08:29	03/25/16 12:31	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00919	U	0.210	0.210	1.00	0.372	pCi/L	03/09/16 08:29	03/25/16 12:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/09/16 08:29*	*03/25/16 12:31*	*1*
Y Carrier	*93.5*		*40 - 110*	*03/09/16 08:29*	*03/25/16 12:31*	*1*

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

Client Sample ID: MW-7
Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**2.82**		1.05	1.07	5.00	1.51	pCi/L		03/30/16 20:35	1

Client Sample ID: MW-8
Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.499**		0.282	0.285	5.00	0.426	pCi/L		03/30/16 20:35	1

Client Sample ID: MW-9
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.802**		0.248	0.255	5.00	0.333	pCi/L		03/30/16 20:35	1

Client Sample ID: MW-10
Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.16**		0.315	0.330	5.00	0.397	pCi/L		03/30/16 20:35	1

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

Client Sample ID: MW-13
Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.913**		0.259	0.267	5.00	0.329	pCi/L		03/30/16 20:35	1

Client Sample ID: MW-9D
Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.824**		0.246	0.253	5.00	0.324	pCi/L		03/30/16 20:35	1

Client Sample ID: MW-10EB
Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0322	U	0.219	0.219	5.00	0.372	pCi/L		03/30/16 20:35	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-220532/1-A
Matrix: Water
Analysis Batch: 221729

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 220532

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		03/07/16 13:37	03/16/16 03:11	1
Arsenic	ND		0.0050	0.00049	mg/L		03/07/16 13:37	03/16/16 03:11	1
Barium	0.00211	J	0.0050	0.0011	mg/L		03/07/16 13:37	03/16/16 03:11	1
Beryllium	0.000134	J	0.0010	0.000053	mg/L		03/07/16 13:37	03/16/16 03:11	1
Cadmium	ND		0.0010	0.000061	mg/L		03/07/16 13:37	03/16/16 03:11	1
Calcium	0.625	J	1.0	0.24	mg/L		03/07/16 13:37	03/16/16 03:11	1
Cobalt	0.0000270	J	0.0010	0.000021	mg/L		03/07/16 13:37	03/16/16 03:11	1
Lead	ND		0.0010	0.00011	mg/L		03/07/16 13:37	03/16/16 03:11	1
Lithium	ND		0.0080	0.00029	mg/L		03/07/16 13:37	03/16/16 03:11	1
Molybdenum	ND		0.010	0.00023	mg/L		03/07/16 13:37	03/16/16 03:11	1
Selenium	ND		0.0050	0.00025	mg/L		03/07/16 13:37	03/16/16 03:11	1
Thallium	ND		0.0010	0.000074	mg/L		03/07/16 13:37	03/16/16 03:11	1

Lab Sample ID: MB 240-220532/1-A
Matrix: Water
Analysis Batch: 222513

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 220532

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0020	0.00060	mg/L		03/07/16 13:37	03/21/16 15:31	1

Lab Sample ID: MB 240-220532/1-A
Matrix: Water
Analysis Batch: 223095

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 220532

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020	0.011	mg/L		03/07/16 13:37	03/24/16 12:24	1

Lab Sample ID: LCS 240-220532/2-A
Matrix: Water
Analysis Batch: 221729

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 220532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0970		mg/L		97	80 - 120
Arsenic	1.00	0.884		mg/L		88	80 - 120
Barium	1.00	0.944		mg/L		94	80 - 120
Beryllium	1.00	0.891		mg/L		89	80 - 120
Cadmium	1.00	0.958		mg/L		96	80 - 120
Calcium	10.0	10.5		mg/L		105	80 - 120
Cobalt	1.00	1.04		mg/L		104	80 - 120
Lead	1.00	1.12		mg/L		112	80 - 120
Lithium	0.100	0.0834		mg/L		83	80 - 120
Molybdenum	0.100	0.0953		mg/L		95	80 - 120
Selenium	1.00	0.910		mg/L		91	80 - 120
Thallium	0.250	0.277		mg/L		111	80 - 120

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

Lab Sample ID: LCS 240-220532/2-A
Matrix: Water
Analysis Batch: 222513

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 220532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1.00	0.990		mg/L		99	80 - 120

Lab Sample ID: LCS 240-220532/2-A
Matrix: Water
Analysis Batch: 223095

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 220532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.100	0.0893		mg/L		89	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-316714/1-A
Matrix: Water
Analysis Batch: 316886

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 316714

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		03/14/16 11:20	03/14/16 18:13	1

Lab Sample ID: LCS 280-316714/2-A
Matrix: Water
Analysis Batch: 316886

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 316714

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.20		ug/L		104	84 - 120

Lab Sample ID: 280-80273-1 MS
Matrix: Ground Water
Analysis Batch: 316886

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 316714

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		5.00	5.18		ug/L		104	75 - 125

Lab Sample ID: 280-80273-1 MSD
Matrix: Ground Water
Analysis Batch: 316886

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 316714

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		5.00	5.07		ug/L		101	75 - 125	2	20

Method: 9040B - pH

Lab Sample ID: LCS 280-315914/4
Matrix: Water
Analysis Batch: 315914

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	7.060		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-316298/6
Matrix: Water
Analysis Batch: 316298

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			03/09/16 11:53	1
Fluoride	ND		0.50	0.060	mg/L			03/09/16 11:53	1
Sulfate	ND		5.0	0.23	mg/L			03/09/16 11:53	1

Lab Sample ID: LCS 280-316298/4
Matrix: Water
Analysis Batch: 316298

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.04		mg/L		101	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-316298/5
Matrix: Water
Analysis Batch: 316298

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	100		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.06		mg/L		101	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-316298/3
Matrix: Water
Analysis Batch: 316298

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.47	J	mg/L		99	50 - 150
Fluoride	0.200	0.163	J	mg/L		82	50 - 150
Sulfate	2.50	2.46	J	mg/L		99	50 - 150

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

Lab Sample ID: MB 280-315569/1
Matrix: Water
Analysis Batch: 315569

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/02/16 14:47	1

Lab Sample ID: LCS 280-315569/2
Matrix: Water
Analysis Batch: 315569

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	491		mg/L		98	86 - 110

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

Lab Sample ID: 280-80273-5 DU
Matrix: Water
Analysis Batch: 315569

Client Sample ID: MW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	1000			1020		mg/L				0.5	10

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

Lab Sample ID: MB 280-315585/2
Matrix: Water
Analysis Batch: 315585

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			03/02/16 16:26	1

Lab Sample ID: LCS 280-315585/1
Matrix: Water
Analysis Batch: 315585

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	92.0		mg/L		92	86 - 114		

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-239583/1-A
Matrix: Water
Analysis Batch: 242941

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239583

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.001703	U	0.0324	0.0324	1.00	0.0668	pCi/L	03/08/16 12:46	03/30/16 07:50	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/08/16 12:46*	*03/30/16 07:50*	*1*

Lab Sample ID: LCS 160-239583/2-A
Matrix: Water
Analysis Batch: 242941

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239583

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	13.35		1.29	1.00	0.0968	pCi/L	120	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*107*		*40 - 110*

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

Lab Sample ID: LCSD 160-239583/3-A
Matrix: Water
Analysis Batch: 242941

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 239583

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.2	13.29		1.29	1.00	0.0906	pCi/L	119	68 - 137	0.02	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*

Lab Sample ID: MB 160-239587/1-A
Matrix: Water
Analysis Batch: 242937

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239587

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.009179	U	0.0428	0.0428	1.00	0.0821	pCi/L	03/08/16 13:37	03/30/16 07:31	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.0*		*40 - 110*	*03/08/16 13:37*	*03/30/16 07:31*	*1*

Lab Sample ID: LCS 160-239587/2-A
Matrix: Water
Analysis Batch: 242937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239587

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	11.76		1.16	1.00	0.0685	pCi/L	105	68 - 137		

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

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-239659/1-A
Matrix: Water
Analysis Batch: 242196

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239659

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.9459		0.318	0.329	1.00	0.441	pCi/L	03/09/16 08:29	03/25/16 12:31	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.0*		*40 - 110*	*03/09/16 08:29*	*03/25/16 12:31*	*1*
Y Carrier	*86.0*		*40 - 110*	*03/09/16 08:29*	*03/25/16 12:31*	*1*

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

Lab Sample ID: LCS 160-239659/2-A
Matrix: Water
Analysis Batch: 242196

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239659

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			15.4	9.402		1.07	1.00	0.364	pCi/L	61	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*
Y Carrier	*87.9*		*40 - 110*

Lab Sample ID: MB 160-239662/1-A
Matrix: Water
Analysis Batch: 241797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239662

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.07816	U	0.218	0.218	1.00	0.376	pCi/L	03/09/16 08:31	03/23/16 12:08	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/09/16 08:31*	*03/23/16 12:08*	*1*
Y Carrier	*80.4*		*40 - 110*	*03/09/16 08:31*	*03/23/16 12:08*	*1*

Lab Sample ID: LCS 160-239662/2-A
Matrix: Water
Analysis Batch: 241797

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239662

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			15.4	9.740		1.10	1.00	0.372	pCi/L	63	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*107*		*40 - 110*
Y Carrier	*80.7*		*40 - 110*

Lab Sample ID: LCSD 160-239662/3-A
Matrix: Water
Analysis Batch: 241797

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 239662

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			15.4	10.46		1.17	1.00	0.402	pCi/L	68	56 - 140	0.32	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*
Y Carrier	*81.9*		*40 - 110*

Metals

Prep Batch: 220532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total Recoverable	Ground Water	3005A	
280-80273-2	MW-8	Total Recoverable	Ground Water	3005A	
280-80273-3	MW-9	Total Recoverable	Ground Water	3005A	
280-80273-4	MW-10	Total Recoverable	Ground Water	3005A	
280-80273-5	MW-13	Total Recoverable	Water	3005A	
280-80273-6	MW-9D	Total Recoverable	Ground Water	3005A	
280-80273-7	MW-10EB	Total Recoverable	Ground Water	3005A	
LCS 240-220532/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-220532/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 221729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total Recoverable	Ground Water	6020A	220532
280-80273-2	MW-8	Total Recoverable	Ground Water	6020A	220532
280-80273-3	MW-9	Total Recoverable	Ground Water	6020A	220532
280-80273-4	MW-10	Total Recoverable	Ground Water	6020A	220532
280-80273-5	MW-13	Total Recoverable	Water	6020A	220532
280-80273-6	MW-9D	Total Recoverable	Ground Water	6020A	220532
280-80273-7	MW-10EB	Total Recoverable	Ground Water	6020A	220532
LCS 240-220532/2-A	Lab Control Sample	Total Recoverable	Water	6020A	220532
MB 240-220532/1-A	Method Blank	Total Recoverable	Water	6020A	220532

Analysis Batch: 222513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total Recoverable	Ground Water	6020A	220532
280-80273-2	MW-8	Total Recoverable	Ground Water	6020A	220532
280-80273-3	MW-9	Total Recoverable	Ground Water	6020A	220532
280-80273-4	MW-10	Total Recoverable	Ground Water	6020A	220532
280-80273-5	MW-13	Total Recoverable	Water	6020A	220532
280-80273-6	MW-9D	Total Recoverable	Ground Water	6020A	220532
280-80273-7	MW-10EB	Total Recoverable	Ground Water	6020A	220532
LCS 240-220532/2-A	Lab Control Sample	Total Recoverable	Water	6020A	220532
MB 240-220532/1-A	Method Blank	Total Recoverable	Water	6020A	220532

Analysis Batch: 223095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total Recoverable	Ground Water	6020A	220532
280-80273-2	MW-8	Total Recoverable	Ground Water	6020A	220532
280-80273-3	MW-9	Total Recoverable	Ground Water	6020A	220532
280-80273-4	MW-10	Total Recoverable	Ground Water	6020A	220532
280-80273-5	MW-13	Total Recoverable	Water	6020A	220532
280-80273-6	MW-9D	Total Recoverable	Ground Water	6020A	220532
280-80273-7	MW-10EB	Total Recoverable	Ground Water	6020A	220532
LCS 240-220532/2-A	Lab Control Sample	Total Recoverable	Water	6020A	220532
MB 240-220532/1-A	Method Blank	Total Recoverable	Water	6020A	220532

Prep Batch: 316714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	7470A	
280-80273-1 MS	MW-7	Total/NA	Ground Water	7470A	
280-80273-1 MSD	MW-7	Total/NA	Ground Water	7470A	

Metals (Continued)

Prep Batch: 316714 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-2	MW-8	Total/NA	Ground Water	7470A	
280-80273-3	MW-9	Total/NA	Ground Water	7470A	
280-80273-4	MW-10	Total/NA	Ground Water	7470A	
280-80273-5	MW-13	Total/NA	Water	7470A	
280-80273-6	MW-9D	Total/NA	Ground Water	7470A	
280-80273-7	MW-10EB	Total/NA	Ground Water	7470A	
LCS 280-316714/2-A	Lab Control Sample	Total/NA	Water	7470A	
MB 280-316714/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 316886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	7470A	316714
280-80273-1 MS	MW-7	Total/NA	Ground Water	7470A	316714
280-80273-1 MSD	MW-7	Total/NA	Ground Water	7470A	316714
280-80273-2	MW-8	Total/NA	Ground Water	7470A	316714
280-80273-3	MW-9	Total/NA	Ground Water	7470A	316714
280-80273-4	MW-10	Total/NA	Ground Water	7470A	316714
280-80273-5	MW-13	Total/NA	Water	7470A	316714
280-80273-6	MW-9D	Total/NA	Ground Water	7470A	316714
280-80273-7	MW-10EB	Total/NA	Ground Water	7470A	316714
LCS 280-316714/2-A	Lab Control Sample	Total/NA	Water	7470A	316714
MB 280-316714/1-A	Method Blank	Total/NA	Water	7470A	316714

General Chemistry

Analysis Batch: 315569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	SM 2540C	
280-80273-2	MW-8	Total/NA	Ground Water	SM 2540C	
280-80273-3	MW-9	Total/NA	Ground Water	SM 2540C	
280-80273-4	MW-10	Total/NA	Ground Water	SM 2540C	
280-80273-5	MW-13	Total/NA	Water	SM 2540C	
280-80273-5 DU	MW-13	Total/NA	Water	SM 2540C	
280-80273-6	MW-9D	Total/NA	Ground Water	SM 2540C	
280-80273-7	MW-10EB	Total/NA	Ground Water	SM 2540C	
LCS 280-315569/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-315569/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 315585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	SM 2540D	
280-80273-2	MW-8	Total/NA	Ground Water	SM 2540D	
280-80273-3	MW-9	Total/NA	Ground Water	SM 2540D	
280-80273-4	MW-10	Total/NA	Ground Water	SM 2540D	
280-80273-5	MW-13	Total/NA	Water	SM 2540D	
280-80273-6	MW-9D	Total/NA	Ground Water	SM 2540D	
280-80273-7	MW-10EB	Total/NA	Ground Water	SM 2540D	
LCS 280-315585/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 280-315585/2	Method Blank	Total/NA	Water	SM 2540D	

General Chemistry (Continued)

Analysis Batch: 315914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	9040B	
280-80273-2	MW-8	Total/NA	Ground Water	9040B	
280-80273-3	MW-9	Total/NA	Ground Water	9040B	
280-80273-4	MW-10	Total/NA	Ground Water	9040B	
280-80273-5	MW-13	Total/NA	Water	9040B	
280-80273-6	MW-9D	Total/NA	Ground Water	9040B	
280-80273-7	MW-10EB	Total/NA	Ground Water	9040B	
LCS 280-315914/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 316298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	9056A	
280-80273-1	MW-7	Total/NA	Ground Water	9056A	
280-80273-2	MW-8	Total/NA	Ground Water	9056A	
280-80273-2	MW-8	Total/NA	Ground Water	9056A	
280-80273-3	MW-9	Total/NA	Ground Water	9056A	
280-80273-3	MW-9	Total/NA	Ground Water	9056A	
280-80273-4	MW-10	Total/NA	Ground Water	9056A	
280-80273-4	MW-10	Total/NA	Ground Water	9056A	
280-80273-5	MW-13	Total/NA	Water	9056A	
280-80273-5	MW-13	Total/NA	Water	9056A	
280-80273-6	MW-9D	Total/NA	Ground Water	9056A	
280-80273-6	MW-9D	Total/NA	Ground Water	9056A	
280-80273-7	MW-10EB	Total/NA	Ground Water	9056A	
LCS 280-316298/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-316298/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-316298/6	Method Blank	Total/NA	Water	9056A	
MRL 280-316298/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 239583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	PrecSep-21	
280-80273-2	MW-8	Total/NA	Ground Water	PrecSep-21	
280-80273-3	MW-9	Total/NA	Ground Water	PrecSep-21	
LCS 160-239583/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-239583/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	
MB 160-239583/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 239587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-4	MW-10	Total/NA	Ground Water	PrecSep-21	
280-80273-5	MW-13	Total/NA	Water	PrecSep-21	
280-80273-6	MW-9D	Total/NA	Ground Water	PrecSep-21	
280-80273-7	MW-10EB	Total/NA	Ground Water	PrecSep-21	
LCS 160-239587/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-239587/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Rad (Continued)

Prep Batch: 239659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-4	MW-10	Total/NA	Ground Water	PrecSep_0	
280-80273-5	MW-13	Total/NA	Water	PrecSep_0	
280-80273-6	MW-9D	Total/NA	Ground Water	PrecSep_0	
280-80273-7	MW-10EB	Total/NA	Ground Water	PrecSep_0	
LCS 160-239659/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-239659/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 239662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-80273-1	MW-7	Total/NA	Ground Water	PrecSep_0	
280-80273-2	MW-8	Total/NA	Ground Water	PrecSep_0	
280-80273-3	MW-9	Total/NA	Ground Water	PrecSep_0	
LCS 160-239662/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-239662/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-239662/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-80273-1

Client Sample ID: MW-7

Date Collected: 03/01/16 09:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-1

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:19	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 15:40	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	223095	03/24/16 12:33	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:25	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:26	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 18:53	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	316298	03/09/16 19:11	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	25 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			250.12 mL	1.0 g	239583	03/08/16 12:46	MRB	TAL SL
Total/NA	Analysis	9315		1	250.12 mL		242942	03/30/16 07:57	RTM	TAL SL
Total/NA	Prep	PrecSep_0			250.12 mL	1.0 g	239662	03/09/16 08:31	CMC	TAL SL
Total/NA	Analysis	9320		1	250.12 mL		241800	03/23/16 12:17	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	RTM	TAL SL

Client Sample ID: MW-8

Date Collected: 02/29/16 15:05
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-2

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:23	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 15:48	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	223095	03/24/16 12:37	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:32	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:15	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 20:04	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	316298	03/09/16 20:21	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	239583	03/08/16 12:46	MRB	TAL SL
Total/NA	Analysis	9315		1	1000.00 mL		242942	03/30/16 07:57	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	239662	03/09/16 08:31	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.00 mL		241800	03/23/16 12:17	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-80273-1

Client Sample ID: MW-9

Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-3

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:27	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 15:56	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	223095	03/24/16 12:41	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:39	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:20	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 20:39	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	316298	03/09/16 20:57	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.56 mL	1.0 g	239583	03/08/16 12:46	MRB	TAL SL
Total/NA	Analysis	9315		1	1000.56 mL		242942	03/30/16 07:58	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.56 mL	1.0 g	239662	03/09/16 08:31	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.56 mL		241800	03/23/16 12:17	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	RTM	TAL SL

Client Sample ID: MW-10

Date Collected: 03/01/16 14:00
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-4

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:31	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 16:05	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	223095	03/24/16 12:45	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:41	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:07	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 21:14	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	316298	03/09/16 21:32	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.67 mL	1.0 g	239587	03/08/16 13:37	MRB	TAL SL
Total/NA	Analysis	9315		1	999.67 mL		242937	03/30/16 07:31	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.67 mL	1.0 g	239659	03/09/16 08:29	CMC	TAL SL
Total/NA	Analysis	9320		1	999.67 mL		242196	03/25/16 12:31	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-80273-1

Client Sample ID: MW-13

Date Collected: 02/29/16 12:20
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-5

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:35	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 16:22	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	223095	03/24/16 13:00	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:43	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:36	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 21:50	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	316298	03/09/16 22:08	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.47 mL	1.0 g	239587	03/08/16 13:37	MRB	TAL SL
Total/NA	Analysis	9315		1	1000.47 mL		242937	03/30/16 07:31	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.47 mL	1.0 g	239659	03/09/16 08:29	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.47 mL		242196	03/25/16 12:31	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	RTM	TAL SL

Client Sample ID: MW-9D

Date Collected: 03/01/16 12:15
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-6

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:40	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 16:30	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	223095	03/24/16 12:54	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:46	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:31	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 22:25	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	316298	03/09/16 22:43	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.19 mL	1.0 g	239587	03/08/16 13:37	MRB	TAL SL
Total/NA	Analysis	9315		1	1000.19 mL		242937	03/30/16 07:32	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.19 mL	1.0 g	239659	03/09/16 08:29	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.19 mL		242196	03/25/16 12:31	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-80273-1

Client Sample ID: MW-10EB

Date Collected: 03/01/16 14:30
Date Received: 03/01/16 15:15

Lab Sample ID: 280-80273-7

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	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	221729	03/16/16 03:44	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	222513	03/21/16 16:39	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	220532	03/07/16 13:37	WKD	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	223095	03/24/16 13:13	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	316714	03/14/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	316886	03/14/16 18:48	CDH	TAL DEN
Total/NA	Analysis	9040B		1			315914	03/04/16 17:01	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	316298	03/09/16 23:36	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	315569	03/02/16 14:47	RSM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	315585	03/02/16 16:26	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.97 mL	1.0 g	239587	03/08/16 13:37	MRB	TAL SL
Total/NA	Analysis	9315		1	1000.97 mL		242937	03/30/16 07:32	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.97 mL	1.0 g	239659	03/09/16 08:29	CMC	TAL SL
Total/NA	Analysis	9320		1	1000.97 mL		242196	03/25/16 12:31	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			242979	03/30/16 20:35	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 - Cherokee

TestAmerica Job ID: 280-80273-1

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	03-31-16 *
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.

Certification Summary

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

TestAmerica Job ID: 280-80273-1

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
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	04-10-16 *
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	02-28-17 *
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

280-80273 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Justin Bills	Lab PM: Kupper, Stephanie	COC No:
Client Contact: Anna Lundin	Phone: 518-331-7027	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 - Cherokee	Project #: 28014371		
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-7	3/1/16	0915	G	Water		N	1	2	1	1	2	4	7
MW-8	2/29/16	1505	G	Water		N	1	2	1	1	2	5	7
MW-9	3/1/16	1215	G	Water		N	1	2	1	1	2	3	7
MW-10	3/1/16	1400	G	Water		N	1	2	1	1	2	7	
~~Field Duplicate~~ (JB) 3/1				Water		N							
~~Equipment Blank~~ (SB) 3/1				Water		N							
MW-13	2/29/16	1220	G	water		N	1	2	1	1	2	7	
MW-9D	3/1/16	1215	G	water		N	1	2	1	1	2	7	
MW-10EB	3/1/16	1430	G	water		N	1	2	1	1	2	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
1	Justin Bills	3/1/16 1515	HDR	Rec'd FedEx	3-1-16 1515	TAD
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Cooler Temperature(s) °C and Other Remarks: 3.1, 1.1, 2.9, -0.2 IR#7 Transferred by DW 3/1/16

3/31/2016

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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: 280-341674.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-80273-1

Address: 13715 Rider Trail North, ,	Due Date Requested: 3/28/2016
City: Earth City	TAT Requested (days):
State, Zip: MO, 63045	PO #:
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	WO #:
Email:	Project #: 28014371
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	SSOW#:
Site: Xcel Energy CCR - Cherokee Station	

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 - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-80273-1)	3/1/16	09:15 Mountain		Water			X	X	X	2	
MW-8 (280-80273-2)	2/29/16	15:05 Mountain		Water			X	X	X	2	
MW-9 (280-80273-3)	3/1/16	12:15 Mountain		Water			X	X	X	2	
MW-10 (280-80273-4)	3/1/16	14:00 Mountain		Water			X	X	X	2	
MW-13 (280-80273-5)	2/29/16	12:20 Mountain		Water			X	X	X	2	
MW-9D (280-80273-6)	3/1/16	12:15 Mountain		Water			X	X	X	2	
MW-10EB (280-80273-7)	3/1/16	14:30 Mountain		Water			X	X	X	2	
2 x 1L HNO3 poly's per Sample P.O.: 3-3-16											

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: 3-3-16 1550	Company TA Denver	Received by: CW McK	Date/Time: 030416 1015	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:

3/31/2016

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

1,2,4 CO.7

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: 280-341673.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-80273-1

Address: 4101 Shuffel Street NW, ,	Due Date Requested: 3/24/2016
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 - Cherokee	Project #: 28014371
Site: Xcel Energy CCR - Cherokee 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 - 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 - 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 14 Metals (Includes B and Ca) - 1/2 -SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7 (280-80273-1)	3/1/16	09:15 Mountain		Water			X	1	Use Collision Cell (KED)
MW-8 (280-80273-2)	2/29/16	15:05 Mountain		Water			X	1	Use Collision Cell
MW-9 (280-80273-3)	3/1/16	12:15 Mountain		Water			X	1	Use Collision Cell
MW-10 (280-80273-4)	3/1/16	14:00 Mountain		Water			X	1	Use Collision Cell
MW-13 (280-80273-5)	2/29/16	12:20 Mountain		Water			X	1	Use Collision Cell
MW-9D (280-80273-6)	3/1/16	12:15 Mountain		Water			X	1	Use Collision Cell
MW-10EB (280-80273-7)	3/1/16	14:30 Mountain		Water			X	1	Use Collision Cell
1 x 500mL HNO3 poly per Stephanie 3-3-16									

5300
5000

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
	3-3-16 1550	TA Denver		3-4-16 9:30am	TA Canton
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

3/31/2016

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

Client TA Denver Site Name

Cooler Received on 3-4-16 Opened on 3-4-16

Cooler unpacked by: Jennystiller

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. 1.2 °C Corrected Cooler Temp. 0.7 °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):

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-80273-1

Login Number: 80273
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.	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: 280-80273-1

Login Number: 80273
List Number: 2
Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis
List Creation: 03/04/16 12:03 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.3, 1.0
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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-80273-1

Login Number: 80273
List Number: 3
Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis
List Creation: 03/04/16 12:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.3, 1.0
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 - Cherokee

TestAmerica Job ID: 280-80273-1

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)
280-80273-1	MW-7	84.0
280-80273-2	MW-8	93.4
280-80273-3	MW-9	101
280-80273-4	MW-10	93.2
280-80273-6	MW-9D	103
280-80273-7	MW-10EB	103

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)
280-80273-5	MW-13	100
LCS 160-239583/2-A	Lab Control Sample	107
LCS 160-239587/2-A	Lab Control Sample	104
LCSD 160-239583/3-A	Lab Control Sample Dup	103
MB 160-239583/1-A	Method Blank	103
MB 160-239587/1-A	Method Blank	98.0

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)
280-80273-1	MW-7	84.0	84.9
280-80273-2	MW-8	93.4	77.8
280-80273-3	MW-9	101	83.4
280-80273-4	MW-10	93.2	82.6
280-80273-6	MW-9D	103	92.3
280-80273-7	MW-10EB	103	93.5

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)
280-80273-5	MW-13	100	87.5

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-80273-1

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

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

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
LCS 160-239659/2-A	Lab Control Sample	104	87.9
LCS 160-239662/2-A	Lab Control Sample	107	80.7
LCSD 160-239662/3-A	Lab Control Sample Dup	103	81.9
MB 160-239659/1-A	Method Blank	98.0	86.0
MB 160-239662/1-A	Method Blank	103	80.4

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: 280-82792-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Authorized for release by:
6/6/2016 2:29:31 PM

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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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.

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: 280-82792-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-82792-1

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 5/5/2016 at 2:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 9.7º C, 12.0º C and 20.5º C.

All three coolers arrived above the recommended 6.0C due to not enough ice in the coolers.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/10/2016 and analyzed on 05/23/2016.

Calcium failed the recovery criteria low for the MS and MSD of sample 190-10542-11 in batch 240-231186. 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-7 (280-82792-1)[20X], MW-8 (280-82792-2)[50X], MW-9 (280-82792-3)[50X], MW-10 (280-82792-4)[20X], MW-13D (280-82792-5)[10X] and MW-13 (280-82792-7)[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-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 05/16/2016.

Mercury failed the recovery criteria low for the MSD of sample 280-82715-2 in batch 280-325636. 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-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 05/09/2016 and 05/10/2016.

Job ID: 280-82792-1 (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-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 05/09/2016.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-82870-1. Sample results were below the method detection limit, so the RPD is not an accurate reflection of the data.

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

CORROSIVITY (PH)
Samples MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 05/05/2016 and 05/07/2016.

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

ANIONS (28 DAYS)
Samples MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 05/19/2016 and 05/20/2016.

Samples MW-7 (280-82792-1)[5X], MW-8 (280-82792-2)[10X], MW-9 (280-82792-3)[20X], MW-10 (280-82792-4)[10X], MW-13D (280-82792-5)[5X] and MW-13 (280-82792-7)[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.

RADIUM-226 (GFPC)
Samples MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 05/11/2016 and analyzed on 06/02/2016.

A deviation from the Standard Operating Procedure (SOP) occurred. Samples were re-prepared as follows: Precipitate on planchette was re-dissolved with EDTA, moved to a centrifuge tube, added standardized yttrium carrier and lead carrier. Samples were placed into a "re-ingrowth" period of at least 36 hours. This is to ensure proper separation of the yttrium oxalate and the barium sulfate which was believed to not have fully separated causing a high radium-228 spike recovery. New T1 times were recorded for the actinium-228, but not for the radium-226. Original T1 time will be used for the radium-226 portion as recorded in TALs. The following samples are impacted: MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6), MW-13 (280-82792-7).

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

RADIUM-228
Samples MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 05/25/2016 and analyzed on 06/02/2016.

A deviation from the Standard Operating Procedure (SOP) occurred. Samples were re-prepared as follows: Precipitate on planchette was re-dissolved with EDTA, moved to a centrifuge tube, added standardized yttrium carrier and lead carrier. Samples were placed into a "re-ingrowth" period of at least 36 hours. This is to ensure proper separation of the yttrium oxalate and the barium sulfate which was believed to not have fully separated causing a high radium-228 spike recovery. New T1 times were recorded for the actinium-228, but not for the radium-226. Original T1 time will be used for the radium-226 portion as recorded in TALs. The following samples are impacted:

Job ID: 280-82792-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6), MW-13 (280-82792-7).

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6), MW-13 (280-82792-7). 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-7 (280-82792-1), MW-8 (280-82792-2), MW-9 (280-82792-3), MW-10 (280-82792-4), MW-13D (280-82792-5), MW-10EB (280-82792-6) and MW-13 (280-82792-7) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 06/05/2016.

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 - Cherokee

TestAmerica Job ID: 280-82792-1

Client Sample ID: MW-7 — Lab Sample ID: 280-82792-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00033	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0013	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.048		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Boron	1.5		0.40	0.22	mg/L	20		6020A	Total Recoverable
Cadmium	0.000098	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	190		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.0023		0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.00045	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00040	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.039		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.012		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.010		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.35	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	550		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	440		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1800		20	9.4	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-8 — Lab Sample ID: 280-82792-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00020	J	0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0017	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.041		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Boron	3.0		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.00089	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	420		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	0.0029		0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.090		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.055		0.010	0.00023	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 280-82792-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.016		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.58	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	430		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1500		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3000		20	9.4	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-9 — Lab Sample ID: 280-82792-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0035		0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0052		0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.061		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Boron	2.6		1.0	0.55	mg/L	50		6020A	Total Recoverable
Cadmium	0.0015		0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	380		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.00093	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.0043		0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.0016		0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.17		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.041		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0085		0.0050	0.00025	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	22.1	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	790		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	2.6		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3400		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-10 — Lab Sample ID: 280-82792-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0025		0.0020	0.00016	mg/L	1		6020A	Total Recoverable
Arsenic	0.0030	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.075		0.0050	0.0011	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-10 (Continued) — Lab Sample ID: 280-82792-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.8		0.40	0.22	mg/L	20		6020A	Total Recoverable
Cadmium	0.00062	J	0.0010	0.000061	mg/L	1		6020A	Total Recoverable
Calcium	300		1.0	0.24	mg/L	1		6020A	Total Recoverable
Chromium	0.00092	J	0.0020	0.00060	mg/L	1		6020A	Total Recoverable
Cobalt	0.0022		0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lead	0.00020	J	0.0010	0.00011	mg/L	1		6020A	Total Recoverable
Lithium	0.14		0.0080	0.00029	mg/L	1		6020A	Total Recoverable
Molybdenum	0.035		0.010	0.00023	mg/L	1		6020A	Total Recoverable
Selenium	0.0054		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.80	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	560		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.0		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1100		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2500		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	64		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-13D — Lab Sample ID: 280-82792-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00051	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.080		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Boron	0.72		0.20	0.11	mg/L	10		6020A	Total Recoverable
Calcium	120		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.00029	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.041		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	0.0060		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.61	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	22.5	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	210		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	160		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	910		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-10EB — Lab Sample ID: 280-82792-6

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-10EB (Continued) — Lab Sample ID: 280-82792-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.86	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	6.0	J	10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-82792-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00049	J	0.0050	0.00049	mg/L	1		6020A	Total Recoverable
Barium	0.078		0.0050	0.0011	mg/L	1		6020A	Total Recoverable
Boron	0.71		0.20	0.11	mg/L	10		6020A	Total Recoverable
Calcium	120		1.0	0.24	mg/L	1		6020A	Total Recoverable
Cobalt	0.00031	J	0.0010	0.000021	mg/L	1		6020A	Total Recoverable
Lithium	0.042		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	0.0058		0.0050	0.00025	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.63	HF	0.100	0.100	SU	1		9040B	Total/NA
Temperature	22.0	HF	1.00	1.00	Degrees C	1		9040B	Total/NA
Chloride	210		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	160		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	890		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-82792-1

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 - Cherokee

TestAmerica Job ID: 280-82792-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-82792-1	MW-7	Ground Water	05/04/16 12:15	05/05/16 14:55
280-82792-2	MW-8	Ground Water	05/04/16 14:00	05/05/16 14:55
280-82792-3	MW-9	Ground Water	05/05/16 10:15	05/05/16 14:55
280-82792-4	MW-10	Ground Water	05/05/16 13:30	05/05/16 14:55
280-82792-5	MW-13D	Water	05/04/16 10:30	05/05/16 14:55
280-82792-6	MW-10EB	Ground Water	05/05/16 13:50	05/05/16 14:55
280-82792-7	MW-13	Water	05/04/16 10:30	05/05/16 14:55

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

Client Sample ID: MW-7
Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00033	J	0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 18:52	1
Arsenic	0.0013	J	0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 18:52	1
Barium	0.048		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 18:52	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 18:52	1
Boron	1.5		0.40	0.22	mg/L		05/10/16 11:51	05/23/16 16:26	20
Cadmium	0.000098	J	0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 18:52	1
Calcium	190		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 18:52	1
Chromium	0.0023		0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 18:52	1
Cobalt	0.00045	J	0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 18:52	1
Lead	0.00040	J	0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 18:52	1
Lithium	0.039		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 18:52	1
Molybdenum	0.012		0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 18:52	1
Selenium	0.010		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 18:52	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 18:52	1

Client Sample ID: MW-8
Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00020	J	0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 18:56	1
Arsenic	0.0017	J	0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 18:56	1
Barium	0.041		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 18:56	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 18:56	1
Boron	3.0		1.0	0.55	mg/L		05/10/16 11:51	05/23/16 16:39	50
Cadmium	0.00089	J	0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 18:56	1
Calcium	420		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 18:56	1
Chromium	0.0011	J	0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 18:56	1
Cobalt	0.0029		0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 18:56	1
Lead	ND		0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 18:56	1
Lithium	0.090		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 18:56	1
Molybdenum	0.055		0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 18:56	1
Selenium	0.016		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 18:56	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 18:56	1

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0035		0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 19:00	1
Arsenic	0.0052		0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 19:00	1
Barium	0.061		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 19:00	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 19:00	1
Boron	2.6		1.0	0.55	mg/L		05/10/16 11:51	05/23/16 16:43	50
Cadmium	0.0015		0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 19:00	1
Calcium	380		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 19:00	1
Chromium	0.00093	J	0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 19:00	1
Cobalt	0.0043		0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 19:00	1
Lead	0.0016		0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 19:00	1
Lithium	0.17		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 19:00	1
Molybdenum	0.041		0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 19:00	1

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

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	**0.0085**		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 19:00	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 19:00	1

Client Sample ID: MW-10
Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0025**		0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 19:04	1
Arsenic	**0.0030**	**J**	0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 19:04	1
Barium	**0.075**		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 19:04	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 19:04	1
Boron	**1.8**		0.40	0.22	mg/L		05/10/16 11:51	05/23/16 16:47	20
Cadmium	**0.00062**	**J**	0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 19:04	1
Calcium	**300**		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 19:04	1
Chromium	**0.00092**	**J**	0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 19:04	1
Cobalt	**0.0022**		0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 19:04	1
Lead	**0.00020**	**J**	0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 19:04	1
Lithium	**0.14**		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 19:04	1
Molybdenum	**0.035**		0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 19:04	1
Selenium	**0.0054**		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 19:04	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 19:04	1

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 19:08	1
Arsenic	**0.00051**	**J**	0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 19:08	1
Barium	**0.080**		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 19:08	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 19:08	1
Boron	**0.72**		0.20	0.11	mg/L		05/10/16 11:51	05/23/16 16:51	10
Cadmium	ND		0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 19:08	1
Calcium	**120**		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 19:08	1
Chromium	ND		0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 19:08	1
Cobalt	**0.00029**	**J**	0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 19:08	1
Lead	ND		0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 19:08	1
Lithium	**0.041**		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 19:08	1
Molybdenum	**0.0034**	**J**	0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 19:08	1
Selenium	**0.0060**		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 19:08	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 19:08	1

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 16:56	1
Arsenic	ND		0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 16:56	1
Barium	ND		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 16:56	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 16:56	1
Boron	ND		0.020	0.011	mg/L		05/10/16 11:51	05/23/16 16:56	1

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

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 16:56	1
Calcium	ND		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 16:56	1
Chromium	ND		0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 16:56	1
Cobalt	ND		0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 16:56	1
Lead	ND		0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 16:56	1
Lithium	ND		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 16:56	1
Molybdenum	ND		0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 16:56	1
Selenium	ND		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 16:56	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 16:56	1

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		05/10/16 11:51	05/23/16 19:12	1
Arsenic	**0.00049**	**J**	0.0050	0.00049	mg/L		05/10/16 11:51	05/23/16 19:12	1
Barium	**0.078**		0.0050	0.0011	mg/L		05/10/16 11:51	05/23/16 19:12	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/23/16 19:12	1
Boron	**0.71**		0.20	0.11	mg/L		05/10/16 11:51	05/23/16 17:00	10
Cadmium	ND		0.0010	0.000061	mg/L		05/10/16 11:51	05/23/16 19:12	1
Calcium	**120**		1.0	0.24	mg/L		05/10/16 11:51	05/23/16 19:12	1
Chromium	ND		0.0020	0.00060	mg/L		05/10/16 11:51	05/23/16 19:12	1
Cobalt	**0.00031**	**J**	0.0010	0.000021	mg/L		05/10/16 11:51	05/23/16 19:12	1
Lead	ND		0.0010	0.00011	mg/L		05/10/16 11:51	05/23/16 19:12	1
Lithium	**0.042**		0.0080	0.00029	mg/L		05/10/16 11:51	05/23/16 19:12	1
Molybdenum	**0.0034**	**J**	0.010	0.00023	mg/L		05/10/16 11:51	05/23/16 19:12	1
Selenium	**0.0058**		0.0050	0.00025	mg/L		05/10/16 11:51	05/23/16 19:12	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/23/16 19:12	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:09	1

Client Sample ID: MW-8
Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:11	1

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:13	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-10
Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:16	1

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:23	1

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:25	1

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 20:27	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.35	HF	0.100	0.100	SU			05/05/16 22:22	1
Temperature	22.3	HF	1.00	1.00	Degrees C			05/05/16 22:22	1
Chloride	550		15	1.3	mg/L			05/19/16 23:46	5
Fluoride	1.3		0.50	0.060	mg/L			05/19/16 23:29	1
Sulfate	440		25	1.2	mg/L			05/19/16 23:46	5
Total Dissolved Solids (TDS)	1800		20	9.4	mg/L			05/09/16 12:28	1
Total Suspended Solids	5.6		4.0	1.1	mg/L			05/09/16 15:39	1

Client Sample ID: MW-8
Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.58	HF	0.100	0.100	SU			05/05/16 22:08	1
Temperature	22.3	HF	1.00	1.00	Degrees C			05/05/16 22:08	1
Chloride	430		30	2.5	mg/L			05/20/16 00:19	10
Fluoride	1.3		0.50	0.060	mg/L			05/20/16 00:02	1
Sulfate	1500		50	2.3	mg/L			05/20/16 00:19	10
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L			05/09/16 12:28	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			05/09/16 15:39	1

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

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			05/05/16 22:26	1

General Chemistry (Continued)

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	22.1	HF	1.00	1.00	Degrees C			05/05/16 22:26	1
Chloride	790		60	5.1	mg/L			05/20/16 00:53	20
Fluoride	2.6		0.50	0.060	mg/L			05/20/16 00:36	1
Sulfate	1400		100	4.6	mg/L			05/20/16 00:53	20
Total Dissolved Solids (TDS)	3400		20	9.4	mg/L			05/10/16 12:00	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			05/09/16 15:39	1

Client Sample ID: MW-10
Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.80	HF	0.100	0.100	SU			05/05/16 22:17	1
Temperature	22.4	HF	1.00	1.00	Degrees C			05/05/16 22:17	1
Chloride	560		30	2.5	mg/L			05/20/16 01:26	10
Fluoride	2.0		0.50	0.060	mg/L			05/20/16 01:10	1
Sulfate	1100		50	2.3	mg/L			05/20/16 01:26	10
Total Dissolved Solids (TDS)	2500		20	9.4	mg/L			05/10/16 12:00	1
Total Suspended Solids	64		4.0	1.1	mg/L			05/09/16 15:39	1

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.61	HF	0.100	0.100	SU			05/05/16 22:14	1
Temperature	22.5	HF	1.00	1.00	Degrees C			05/05/16 22:14	1
Chloride	210		15	1.3	mg/L			05/20/16 02:00	5
Fluoride	1.2		0.50	0.060	mg/L			05/20/16 01:43	1
Sulfate	160		5.0	0.23	mg/L			05/20/16 01:43	1
Total Dissolved Solids (TDS)	910		10	4.7	mg/L			05/10/16 12:00	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/09/16 15:39	1

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

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			05/07/16 14:44	1
Temperature	19.7	HF	1.00	1.00	Degrees C			05/07/16 14:44	1
Chloride	ND		3.0	0.25	mg/L			05/20/16 02:50	1
Fluoride	ND		0.50	0.060	mg/L			05/20/16 02:50	1
Sulfate	ND		5.0	0.23	mg/L			05/20/16 02:50	1
Total Dissolved Solids (TDS)	6.0	J	10	4.7	mg/L			05/10/16 12:00	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/09/16 15:39	1

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.63	HF	0.100	0.100	SU			05/05/16 22:38	1
Temperature	22.0	HF	1.00	1.00	Degrees C			05/05/16 22:38	1
Chloride	210		15	1.3	mg/L			05/20/16 03:24	5

General Chemistry (Continued)

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1.2		0.50	0.060	mg/L			05/20/16 03:07	1
Sulfate	160		5.0	0.23	mg/L			05/20/16 03:07	1
Total Dissolved Solids (TDS)	890		10	4.7	mg/L			05/10/16 12:00	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			05/09/16 15:39	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.249		0.0660	0.0697	1.00	0.0493	pCi/L	05/11/16 18:00	06/02/16 07:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*69.2*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:52*	*1*

Client Sample ID: MW-8
Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.233		0.0751	0.0780	1.00	0.0839	pCi/L	05/11/16 18:00	06/02/16 07:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*67.2*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:52*	*1*

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.135		0.0620	0.0632	1.00	0.0826	pCi/L	05/11/16 18:00	06/02/16 07:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.4*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:52*	*1*

Client Sample ID: MW-10
Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.110		0.0526	0.0535	1.00	0.0673	pCi/L	05/11/16 18:00	06/02/16 07:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*67.8*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:52*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.230**		0.0648	0.0680	1.00	0.0641	pCi/L	05/11/16 18:00	06/02/16 07:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*78.3*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:53*	*1*

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00229	U	0.0311	0.0311	1.00	0.0617	pCi/L	05/11/16 18:00	06/02/16 07:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*69.5*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:53*	*1*

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.220**		0.0665	0.0694	1.00	0.0611	pCi/L	05/11/16 18:00	06/02/16 07:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*65.0*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:53*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.524	U	0.410	0.412	1.00	0.647	pCi/L	05/25/16 18:35	06/02/16 14:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.2*		*40 - 110*	*05/25/16 18:35*	*06/02/16 14:32*	*1*
Y Carrier	*94.2*		*40 - 110*	*05/25/16 18:35*	*06/02/16 14:32*	*1*

Client Sample ID: MW-8
Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.522	U	0.434	0.436	1.00	0.691	pCi/L	05/25/16 18:35	06/02/16 14:46	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		40 - 110	05/25/16 18:35	06/02/16 14:46	1
Y Carrier	95.0		40 - 110	05/25/16 18:35	06/02/16 14:46	1

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.868**		0.467	0.473	1.00	0.698	pCi/L	05/25/16 18:35	06/02/16 14:32	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.0		40 - 110	05/25/16 18:35	06/02/16 14:32	1
Y Carrier	92.0		40 - 110	05/25/16 18:35	06/02/16 14:32	1

Client Sample ID: MW-10
Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.594	U	0.417	0.421	1.00	0.649	pCi/L	05/25/16 18:35	06/02/16 14:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.4		40 - 110	05/25/16 18:35	06/02/16 14:33	1
Y Carrier	90.1		40 - 110	05/25/16 18:35	06/02/16 14:33	1

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.218	U	0.366	0.367	1.00	0.621	pCi/L	05/25/16 18:35	06/02/16 14:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/25/16 18:35	06/02/16 14:33	1
Y Carrier	89.7		40 - 110	05/25/16 18:35	06/02/16 14:33	1

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.161	U	0.370	0.370	1.00	0.637	pCi/L	05/25/16 18:35	06/02/16 14:28	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.4		40 - 110	05/25/16 18:35	06/02/16 14:28	1
Y Carrier	90.8		40 - 110	05/25/16 18:35	06/02/16 14:28	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.01		0.443	0.453	1.00	0.627	pCi/L	05/25/16 18:35	06/02/16 14:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*05/25/16 18:35*	*06/02/16 14:28*	*1*
Y Carrier	*93.1*		*40 - 110*	*05/25/16 18:35*	*06/02/16 14:28*	*1*

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

Client Sample ID: MW-7
Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.772		0.415	0.418	5.00	0.647	pCi/L		06/05/16 23:05	1

Client Sample ID: MW-8
Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.756		0.440	0.443	5.00	0.691	pCi/L		06/05/16 23:05	1

Client Sample ID: MW-9
Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.00		0.471	0.478	5.00	0.698	pCi/L		06/05/16 23:05	1

Client Sample ID: MW-10
Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.704		0.420	0.424	5.00	0.649	pCi/L		06/05/16 23:05	1

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

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.448	U	0.372	0.373	5.00	0.621	pCi/L		06/05/16 23:05	1

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.163	U	0.371	0.371	5.00	0.637	pCi/L		06/05/16 23:05	1

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.23**		0.448	0.458	5.00	0.627	pCi/L		06/05/16 23:05	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-229647/1-A
Matrix: Water
Analysis Batch: 232005

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 229647

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00016	mg/L		05/10/16 11:51	05/25/16 13:01	1
Arsenic	ND		0.0050	0.00049	mg/L		05/10/16 11:51	05/25/16 13:01	1
Barium	ND		0.0050	0.0011	mg/L		05/10/16 11:51	05/25/16 13:01	1
Beryllium	ND		0.0010	0.000053	mg/L		05/10/16 11:51	05/25/16 13:01	1
Boron	ND		0.020	0.011	mg/L		05/10/16 11:51	05/25/16 13:01	1
Cadmium	ND		0.0010	0.000061	mg/L		05/10/16 11:51	05/25/16 13:01	1
Calcium	ND		1.0	0.24	mg/L		05/10/16 11:51	05/25/16 13:01	1
Chromium	ND		0.0020	0.00060	mg/L		05/10/16 11:51	05/25/16 13:01	1
Cobalt	ND		0.0010	0.000021	mg/L		05/10/16 11:51	05/25/16 13:01	1
Lead	ND		0.0010	0.00011	mg/L		05/10/16 11:51	05/25/16 13:01	1
Lithium	ND		0.0080	0.00029	mg/L		05/10/16 11:51	05/25/16 13:01	1
Molybdenum	ND		0.010	0.00023	mg/L		05/10/16 11:51	05/25/16 13:01	1
Selenium	ND		0.0050	0.00025	mg/L		05/10/16 11:51	05/25/16 13:01	1
Thallium	ND		0.0010	0.000074	mg/L		05/10/16 11:51	05/25/16 13:01	1

Lab Sample ID: LCS 240-229647/2-A
Matrix: Water
Analysis Batch: 232005

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 229647

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.101		mg/L		101	80 - 120
Arsenic	1.00	1.01		mg/L		101	80 - 120
Barium	1.00	1.02		mg/L		102	80 - 120
Beryllium	1.00	1.04		mg/L		104	80 - 120
Boron	0.100	0.103		mg/L		103	80 - 120
Cadmium	1.00	1.04		mg/L		104	80 - 120
Calcium	10.0	10.7		mg/L		107	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Cobalt	1.00	1.05		mg/L		105	80 - 120
Lead	1.00	1.05		mg/L		105	80 - 120
Lithium	0.100	0.102		mg/L		102	80 - 120
Molybdenum	0.100	0.102		mg/L		102	80 - 120
Selenium	1.00	1.02		mg/L		102	80 - 120
Thallium	0.250	0.260		mg/L		104	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-325165/1-A
Matrix: Water
Analysis Batch: 325636

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 325165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		05/16/16 11:55	05/16/16 19:33	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 280-325165/2-A
Matrix: Water
Analysis Batch: 325636

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 325165

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: LCSD 280-325165/3-A
Matrix: Water
Analysis Batch: 325636

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 325165

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	5.00	5.19		ug/L		104	84 - 120	0	15

Method: 9040B - pH

Lab Sample ID: LCS 280-324141/4
Matrix: Water
Analysis Batch: 324141

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	6.980		SU		100	99 - 101

Lab Sample ID: LCS 280-324672/4
Matrix: Water
Analysis Batch: 324672

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	6.980		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-326042/6
Matrix: Water
Analysis Batch: 326042

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			05/19/16 11:17	1
Fluoride	ND		0.50	0.060	mg/L			05/19/16 11:17	1
Sulfate	ND		5.0	0.23	mg/L			05/19/16 11:17	1

Lab Sample ID: LCS 280-326042/4
Matrix: Water
Analysis Batch: 326042

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.3		mg/L		98	90 - 110
Fluoride	5.00	5.11		mg/L		102	90 - 110
Sulfate	100	98.3		mg/L		98	90 - 110

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

Lab Sample ID: LCSD 280-326042/5
Matrix: Water
Analysis Batch: 326042

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.4		mg/L		98	90 - 110	0	10
Fluoride	5.00	5.11		mg/L		102	90 - 110	0	10
Sulfate	100	98.5		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-326042/3
Matrix: Water
Analysis Batch: 326042

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.50	J	mg/L		100	50 - 150
Fluoride	0.200	0.185	J	mg/L		92	50 - 150
Sulfate	2.50	2.52	J	mg/L		101	50 - 150

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

Lab Sample ID: MB 280-324466/1
Matrix: Water
Analysis Batch: 324466

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/09/16 12:28	1

Lab Sample ID: LCS 280-324466/2
Matrix: Water
Analysis Batch: 324466

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

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

Lab Sample ID: 280-82792-2 DU
Matrix: Ground Water
Analysis Batch: 324466

Client Sample ID: MW-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	3000		3020		mg/L		0.8	10

Lab Sample ID: MB 280-324647/1
Matrix: Water
Analysis Batch: 324647

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/10/16 12:00	1

Lab Sample ID: LCS 280-324647/2
Matrix: Water
Analysis Batch: 324647

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	496		mg/L		99	86 - 110

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

Lab Sample ID: 280-82792-7 DU
Matrix: Water
Analysis Batch: 324647

Client Sample ID: MW-13
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	890			888		mg/L				0.3	10

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

Lab Sample ID: MB 280-324515/3
Matrix: Water
Analysis Batch: 324515

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			05/09/16 15:39	1

Lab Sample ID: LCS 280-324515/1
Matrix: Water
Analysis Batch: 324515

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	94.4		mg/L		94	86 - 114		

Lab Sample ID: LCSD 280-324515/2
Matrix: Water
Analysis Batch: 324515

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	92.0		mg/L		92	86 - 114	3	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-250663/1-A
Matrix: Water
Analysis Batch: 254480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 250663

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03314	U	0.0343	0.0344	1.00	0.0546	pCi/L	05/11/16 18:00	06/02/16 07:51	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.4*		*40 - 110*	*05/11/16 18:00*	*06/02/16 07:51*	*1*

Lab Sample ID: LCS 160-250663/2-A
Matrix: Water
Analysis Batch: 254480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 250663

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	10.79		1.04	1.00	0.0490	pCi/L	97	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*76.1*		*40 - 110*

Lab Sample ID: LCSD 160-250663/3-A
Matrix: Water
Analysis Batch: 254480

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 250663

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.2	12.02		1.17	1.00	0.0941	pCi/L	108	68 - 137	0.56	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*61.8*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-253318/1-A
Matrix: Water
Analysis Batch: 254481

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253318

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.01240	U	0.235	0.235	1.00	0.416	pCi/L	05/25/16 18:35	06/02/16 14:30	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.2*		*40 - 110*	*05/25/16 18:35*	*06/02/16 14:30*	*1*
Y Carrier	*89.3*		*40 - 110*	*05/25/16 18:35*	*06/02/16 14:30*	*1*

Lab Sample ID: LCS 160-253318/2-A
Matrix: Water
Analysis Batch: 254481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253318

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			15.1	16.80		1.76	1.00	0.370	pCi/L	111	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.0*		*40 - 110*
Y Carrier	*90.5*		*40 - 110*

Lab Sample ID: LCSD 160-253318/3-A
Matrix: Water
Analysis Batch: 254481

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 253318

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			15.1	18.73		1.95	1.00	0.403	pCi/L	124	56 - 140	0.52	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*89.7*		*40 - 110*
Y Carrier	*86.0*		*40 - 110*

Metals

Prep Batch: 229647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total Recoverable	Ground Water	3005A	
280-82792-2	MW-8	Total Recoverable	Ground Water	3005A	
280-82792-3	MW-9	Total Recoverable	Ground Water	3005A	
280-82792-4	MW-10	Total Recoverable	Ground Water	3005A	
280-82792-5	MW-13D	Total Recoverable	Water	3005A	
280-82792-6	MW-10EB	Total Recoverable	Ground Water	3005A	
280-82792-7	MW-13	Total Recoverable	Water	3005A	
LCS 240-229647/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-229647/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 231614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total Recoverable	Ground Water	6020A	229647
280-82792-1	MW-7	Total Recoverable	Ground Water	6020A	229647
280-82792-2	MW-8	Total Recoverable	Ground Water	6020A	229647
280-82792-2	MW-8	Total Recoverable	Ground Water	6020A	229647
280-82792-3	MW-9	Total Recoverable	Ground Water	6020A	229647
280-82792-3	MW-9	Total Recoverable	Ground Water	6020A	229647
280-82792-4	MW-10	Total Recoverable	Ground Water	6020A	229647
280-82792-4	MW-10	Total Recoverable	Ground Water	6020A	229647
280-82792-5	MW-13D	Total Recoverable	Water	6020A	229647
280-82792-5	MW-13D	Total Recoverable	Water	6020A	229647
280-82792-6	MW-10EB	Total Recoverable	Ground Water	6020A	229647
280-82792-7	MW-13	Total Recoverable	Water	6020A	229647
280-82792-7	MW-13	Total Recoverable	Water	6020A	229647

Analysis Batch: 232005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-229647/2-A	Lab Control Sample	Total Recoverable	Water	6020A	229647
MB 240-229647/1-A	Method Blank	Total Recoverable	Water	6020A	229647

Prep Batch: 325165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	7470A	
280-82792-2	MW-8	Total/NA	Ground Water	7470A	
280-82792-3	MW-9	Total/NA	Ground Water	7470A	
280-82792-4	MW-10	Total/NA	Ground Water	7470A	
280-82792-5	MW-13D	Total/NA	Water	7470A	
280-82792-6	MW-10EB	Total/NA	Ground Water	7470A	
280-82792-7	MW-13	Total/NA	Water	7470A	
LCS 280-325165/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-325165/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	
MB 280-325165/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 325636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	7470A	325165
280-82792-2	MW-8	Total/NA	Ground Water	7470A	325165
280-82792-3	MW-9	Total/NA	Ground Water	7470A	325165
280-82792-4	MW-10	Total/NA	Ground Water	7470A	325165
280-82792-5	MW-13D	Total/NA	Water	7470A	325165

Metals (Continued)

Analysis Batch: 325636 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-6	MW-10EB	Total/NA	Ground Water	7470A	325165
280-82792-7	MW-13	Total/NA	Water	7470A	325165
LCS 280-325165/2-A	Lab Control Sample	Total/NA	Water	7470A	325165
LCSD 280-325165/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	325165
MB 280-325165/1-A	Method Blank	Total/NA	Water	7470A	325165

General Chemistry

Analysis Batch: 324141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	9040B	
280-82792-2	MW-8	Total/NA	Ground Water	9040B	
280-82792-3	MW-9	Total/NA	Ground Water	9040B	
280-82792-4	MW-10	Total/NA	Ground Water	9040B	
280-82792-5	MW-13D	Total/NA	Water	9040B	
280-82792-7	MW-13	Total/NA	Water	9040B	
LCS 280-324141/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 324466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	SM 2540C	
280-82792-2	MW-8	Total/NA	Ground Water	SM 2540C	
280-82792-2 DU	MW-8	Total/NA	Ground Water	SM 2540C	
LCS 280-324466/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-324466/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 324515

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	SM 2540D	
280-82792-2	MW-8	Total/NA	Ground Water	SM 2540D	
280-82792-3	MW-9	Total/NA	Ground Water	SM 2540D	
280-82792-4	MW-10	Total/NA	Ground Water	SM 2540D	
280-82792-5	MW-13D	Total/NA	Water	SM 2540D	
280-82792-6	MW-10EB	Total/NA	Ground Water	SM 2540D	
280-82792-7	MW-13	Total/NA	Water	SM 2540D	
LCS 280-324515/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-324515/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
MB 280-324515/3	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 324647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-3	MW-9	Total/NA	Ground Water	SM 2540C	
280-82792-4	MW-10	Total/NA	Ground Water	SM 2540C	
280-82792-5	MW-13D	Total/NA	Water	SM 2540C	
280-82792-6	MW-10EB	Total/NA	Ground Water	SM 2540C	
280-82792-7	MW-13	Total/NA	Water	SM 2540C	
280-82792-7 DU	MW-13	Total/NA	Water	SM 2540C	
LCS 280-324647/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 280-324647/1	Method Blank	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 324672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-6	MW-10EB	Total/NA	Ground Water	9040B	
LCS 280-324672/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 326042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	9056A	
280-82792-1	MW-7	Total/NA	Ground Water	9056A	
280-82792-2	MW-8	Total/NA	Ground Water	9056A	
280-82792-2	MW-8	Total/NA	Ground Water	9056A	
280-82792-3	MW-9	Total/NA	Ground Water	9056A	
280-82792-3	MW-9	Total/NA	Ground Water	9056A	
280-82792-4	MW-10	Total/NA	Ground Water	9056A	
280-82792-4	MW-10	Total/NA	Ground Water	9056A	
280-82792-5	MW-13D	Total/NA	Water	9056A	
280-82792-5	MW-13D	Total/NA	Water	9056A	
280-82792-6	MW-10EB	Total/NA	Ground Water	9056A	
280-82792-7	MW-13	Total/NA	Water	9056A	
280-82792-7	MW-13	Total/NA	Water	9056A	
LCS 280-326042/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-326042/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MB 280-326042/6	Method Blank	Total/NA	Water	9056A	
MRL 280-326042/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 250663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	PrecSep-21	
280-82792-2	MW-8	Total/NA	Ground Water	PrecSep-21	
280-82792-3	MW-9	Total/NA	Ground Water	PrecSep-21	
280-82792-4	MW-10	Total/NA	Ground Water	PrecSep-21	
280-82792-5	MW-13D	Total/NA	Water	PrecSep-21	
280-82792-6	MW-10EB	Total/NA	Ground Water	PrecSep-21	
280-82792-7	MW-13	Total/NA	Water	PrecSep-21	
LCS 160-250663/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-250663/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	
MB 160-250663/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 253318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-82792-1	MW-7	Total/NA	Ground Water	PrecSep_0	
280-82792-2	MW-8	Total/NA	Ground Water	PrecSep_0	
280-82792-3	MW-9	Total/NA	Ground Water	PrecSep_0	
280-82792-4	MW-10	Total/NA	Ground Water	PrecSep_0	
280-82792-5	MW-13D	Total/NA	Water	PrecSep_0	
280-82792-6	MW-10EB	Total/NA	Ground Water	PrecSep_0	
280-82792-7	MW-13	Total/NA	Water	PrecSep_0	
LCS 160-253318/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-253318/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-253318/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-82792-1

Client Sample ID: MW-7

Date Collected: 05/04/16 12:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-1
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	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	231614	05/23/16 16:26	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 18:52	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:09	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324141	05/05/16 22:22	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/19/16 23:29	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	326042	05/19/16 23:46	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	324466	05/09/16 12:28	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			942.96 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	942.96 mL		254480	06/02/16 07:52	RTM	TAL SL
Total/NA	Prep	PrecSep_0			499.21 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	499.21 mL		254481	06/02/16 14:32	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Client Sample ID: MW-8

Date Collected: 05/04/16 14:00
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-2
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	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	231614	05/23/16 16:39	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 18:56	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:11	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324141	05/05/16 22:08	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/20/16 00:02	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	326042	05/20/16 00:19	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	324466	05/09/16 12:28	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			920.28 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	920.28 mL		254480	06/02/16 07:52	RTM	TAL SL
Total/NA	Prep	PrecSep_0			499.58 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	499.58 mL		254506	06/02/16 14:46	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-82792-1

Client Sample ID: MW-9

Date Collected: 05/05/16 10:15
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-3

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	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		50	50 mL	50 mL	231614	05/23/16 16:43	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 19:00	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:13	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324141	05/05/16 22:26	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/20/16 00:36	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	326042	05/20/16 00:53	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	324647	05/10/16 12:00	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			968.52 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	968.52 mL		254480	06/02/16 07:52	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.22 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	500.22 mL		254481	06/02/16 14:32	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Client Sample ID: MW-10

Date Collected: 05/05/16 13:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-4

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	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		20	50 mL	50 mL	231614	05/23/16 16:47	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 19:04	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:16	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324141	05/05/16 22:17	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/20/16 01:10	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	326042	05/20/16 01:26	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	324647	05/10/16 12:00	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	1000.34 mL		254480	06/02/16 07:52	RTM	TAL SL
Total/NA	Prep	PrecSep_0			499.27 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	499.27 mL		254481	06/02/16 14:33	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-82792-1

Client Sample ID: MW-13D
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-5
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	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		10	50 mL	50 mL	231614	05/23/16 16:51	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 19:08	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:23	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324141	05/05/16 22:14	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/20/16 01:43	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	326042	05/20/16 02:00	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	324647	05/10/16 12:00	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			944.88 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	944.88 mL		254480	06/02/16 07:53	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.00 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	500.00 mL		254481	06/02/16 14:33	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Client Sample ID: MW-10EB
Date Collected: 05/05/16 13:50
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-6
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	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 16:56	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:25	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324672	05/07/16 14:44	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/20/16 02:50	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	324647	05/10/16 12:00	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			945.16 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	945.16 mL		254480	06/02/16 07:53	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.00 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	500.00 mL		254480	06/02/16 14:28	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Client Sample ID: MW-13
Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN

Lab Chronicle

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

TestAmerica Job ID: 280-82792-1

Client Sample ID: MW-13

Date Collected: 05/04/16 10:30
Date Received: 05/05/16 14:55

Lab Sample ID: 280-82792-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6020A		10	50 mL	50 mL	231614	05/23/16 17:00	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	229647	05/10/16 11:51	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1	50 mL	50 mL	231614	05/23/16 19:12	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	325165	05/16/16 11:55	CDH	TAL DEN
Total/NA	Analysis	7470A		1	30 mL	50 mL	325636	05/16/16 20:27	CDH	TAL DEN
Total/NA	Analysis	9040B		1			324141	05/05/16 22:38	MAS	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	326042	05/20/16 03:07	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	326042	05/20/16 03:24	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	324647	05/10/16 12:00	MNG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	324515	05/09/16 15:39	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			965.87 mL	1.0 g	250663	05/11/16 18:00	MCJ	TAL SL
Total/NA	Analysis	9315		1	965.87 mL		254480	06/02/16 07:53	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.25 mL	1.0 g	253318	05/25/16 18:35	MCJ	TAL SL
Total/NA	Analysis	9320		1	500.25 mL		254480	06/02/16 14:28	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			254845	06/05/16 23:05	RTM	TAL SL

Laboratory References:

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

Certification Summary

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

TestAmerica Job ID: 280-82792-1

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
Oregon	NELAP	10	4025	01-09-17

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Ground Water	Temperature
9040B		Water	Temperature

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 *
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16 *

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-82792-1

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
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

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:	Analysis Requested
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: 720-633-2380(Tel)	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371	
Site: Colorado	SSOW#:	

280-82792 Chain of Custody

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 (TI	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-7	5/4/16	1215	G	Water		N	1	2	1	1	2	7	
MW-8	5/4/16	1400	G	Water		N	1	2	1	1	2	7	
MW-9	5/5/16	1015	G	Water		N	1	2	1	1	2	7	
MW-10	5/5/16	1330	G	Water		N	1	2	1	1	2	7	
~~Field Duplicate~~ MW-13D	5/4/16	1030	G	Water		N	1	2	1	1	2	7	
~~Equipment Blank~~ MW-10EB	5/5/16	1350	G	Water		N	1	2	1	1	2	7	
MW-13	5/4/16	1030	G	Water		N	1	2	1	1	2	7	

5/5/16

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Justin Bills	5/5/16 1455	HDR		05/05/16 1455	TAD
2						
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: Transferred via MS 9.8, 20.6, 12.1 ID25 -0.1

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: 280-350103.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-82792-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/1/2016			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-7 (280-82792-1)	5/4/16	12:15 Mountain		Water			X	X	2	
MW-8 (280-82792-2)	5/4/16	14:00 Mountain		Water			X	X	2	
MW-9 (280-82792-3)	5/5/16	10:15 Mountain		Water			X	X	2	
MW-10 (280-82792-4)	5/5/16	13:30 Mountain		Water			X	X	2	
MW-13D (280-82792-5)	5/4/16	10:30 Mountain		Water			X	X	2	
MW-10EB (280-82792-6)	5/5/16	13:50 Mountain		Water			X	X	2	
MW-13 (280-82792-7)	5/4/16	10:30 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: [signature]	Date/Time: 5/6/16 14:18	Company	Received by: [signature]	Date/Time: 5-7-16 0830	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

4.0/C3.5

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. 280-350104.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.kupper@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Analysis Requested		Job #: 280-82792-1

Address: 4101 Shuffel Street NW, ,	Due Date Requested: 5/27/2016
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 - Cherokee	Project #: 28014371
Site: Xcel Energy CCR - Cherokee Station	SSOW#:

Preservation Codes:

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

Other:

S23

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 14 Metals (Includes B and Ca) - 1/2 -SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7 (280-82792-1)	5/4/16	12:15 Mountain		Water			X	1	Use Collision Cell
MW-8 (280-82792-2)	5/4/16	14:00 Mountain		Water			X	1	Use Collision Cell
MW-9 (280-82792-3)	5/5/16	10:15 Mountain		Water			X	1	Use Collision Cell
MW-10 (280-82792-4)	5/5/16	13:30 Mountain		Water			X	1	Use Collision Cell
MW-13D (280-82792-5)	5/4/16	10:30 Mountain		Water			X	1	Use Collision Cell
MW-10EB (280-82792-6)	5/5/16	13:50 Mountain		Water			X	1	Use Collision Cell
MW-13 (280-82792-7)	5/4/16	10:30 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
1	[signature]	5/6/16 1411		[signature]	5/7/16 1000	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

6/6/2016

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

Client Denver Site Name _____ Cooler unpacked by:

Cooler Received on 5-7-16 Opened on 5-9-16

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. 4.0 °C Corrected Cooler Temp. 3.5 °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** (NA)
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: 280-82792-1

Login Number: 82792
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.	False	NOT ENOUGH
Cooler Temperature is acceptable.	False	REFER TO CUR SHEET
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: 280-82792-1

Login Number: 82792
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 05/09/16 11:55 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	0.4, 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 - Cherokee

TestAmerica Job ID: 280-82792-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
280-82792-1	MW-7	69.2
280-82792-2	MW-8	67.2
280-82792-3	MW-9	72.4
280-82792-4	MW-10	67.8
280-82792-6	MW-10EB	69.5

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
280-82792-5	MW-13D	78.3
280-82792-7	MW-13	65.0
LCS 160-250663/2-A	Lab Control Sample	76.1
LCSD 160-250663/3-A	Lab Control Sample Dup	61.8
MB 160-250663/1-A	Method Blank	76.4

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
280-82792-1	MW-7	97.2	94.2
280-82792-2	MW-8	96.6	95.0
280-82792-3	MW-9	96.0	92.0
280-82792-4	MW-10	99.4	90.1
280-82792-6	MW-10EB	95.4	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)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
280-82792-5	MW-13D	101	89.7
280-82792-7	MW-13	95.2	93.1
LCS 160-253318/2-A	Lab Control Sample	94.0	90.5
LCSD 160-253318/3-A	Lab Control Sample Dup	89.7	86.0

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-82792-1

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

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

		Percent Yield (Acceptance Limits)									
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)								
MB 160-253318/1-A	Method Blank	89.2	89.3								

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: 280-87226-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
9/23/2016 12:54:57 PM

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

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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 - Cherokee

TestAmerica Job ID: 280-87226-1

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.
F1	MS and/or MSD Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 280-87226-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-87226-1

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

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

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

RECEIPT

The samples were received on 8/23/2016 at 3:48 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.2º C and 3.1º C.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) 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 and 09/07/2016.

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.

Calcium failed the recovery criteria low for the MS of sample MW-10 (280-87226-2) in batch 240-245809. Beryllium and Boron failed the recovery criteria high. Beryllium and Calcium failed the recovery criteria high for the MSD of sample MW-10 (280-87226-2) in batch 240-245809. 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-7 (280-87226-1)[20X], MW-10 (280-87226-2)[50X], MW-13D (280-87226-3)[10X] and MW-13 (280-87226-5)[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-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 09/09/2016.

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

TOTAL DISSOLVED SOLIDS

Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/25/2016.

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

Job ID: 280-87226-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL SUSPENDED SOLIDS
Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/29/2016.

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

CORROSIVITY (PH)
Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/24/2016.

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

ANIONS (28 DAYS)
Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/09/2016 and 09/13/2016.

Chloride was detected in method blank MB 280-341503/13 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 was detected in method blank MB 280-341858/6 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 280-87664-9 in batch 280-341503. Sulfate failed the recovery criteria high. 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-7 (280-87226-1)[5X], MW-10 (280-87226-2)[10X], MW-10 (280-87226-2)[5X], MW-13D (280-87226-3)[5X] and MW-13 (280-87226-5)[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.

RADIUM-226 (GFPC)
Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) 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.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4), MW-13 (280-87226-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

The following sample was prepared at a reduced aliquot due to sediment: MW-7 (280-87226-1).

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

RADIUM-228
Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/30/2016 and analyzed on 09/14/2016.

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4), MW-13 (280-87226-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Job ID: 280-87226-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following sample was prepared at a reduced aliquot due to sediment: MW-7 (280-87226-1).

The radium-228 detection goal was not met for the following sample due to the reduced sample volume attributed to the presence of matrix interferences: MW-7 (280-87226-1). Analytical results are reported with the detection limit achieved.

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

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-7 (280-87226-1), MW-10 (280-87226-2), MW-13D (280-87226-3), MW-13EB (280-87226-4) and MW-13 (280-87226-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/23/2016.

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 - Cherokee

TestAmerica Job ID: 280-87226-1

Client Sample ID: MW-7 — Lab Sample ID: 280-87226-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0011	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0056		0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.16	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Beryllium	0.0011		0.0010	0.00040	mg/L	1		6020A	Total Recoverable
Boron	1.6	B	0.40	0.050	mg/L	20		6020A	Total Recoverable
Cadmium	0.00068	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	240	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.036		0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0075		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.016	B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.082		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.011		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0036	J	0.0050	0.00048	mg/L	1		6020A	Total Recoverable
Thallium	0.00052	J	0.0010	0.00028	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	600	B	15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.87		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	430		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3000		500	140	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 280-87226-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.0022		0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0038	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.066	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Boron	2.5	B	1.0	0.13	mg/L	50		6020A	Total Recoverable
Cadmium	0.00044	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	360	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.018		0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0013		0.0010	0.00013	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 - Cherokee

TestAmerica Job ID: 280-87226-1

Client Sample ID: MW-10 (Continued) — Lab Sample ID: 280-87226-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.00055	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.093		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.048		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0045	J	0.0050	0.00048	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	9.0	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	350	B	15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1000	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	14		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-13D — Lab Sample ID: 280-87226-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00078	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.077	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Boron	0.67	B	0.20	0.025	mg/L	10		6020A	Total Recoverable
Calcium	120	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.0019	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.00036	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00038	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.032		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0025	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0052		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.99		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	180		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	980		10	4.7	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-13EB — Lab Sample ID: 280-87226-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.0041	J B	0.020	0.0025	mg/L	1		6020A	Total Recoverable
Calcium	0.096	J B	1.0	0.043	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: MW-13EB (Continued) — Lab Sample ID: 280-87226-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	0.69	J B	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	0.41	J	5.0	0.23	mg/L	1		9056A	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-87226-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00073	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.078	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Boron	0.63	B	0.20	0.025	mg/L	10		6020A	Total Recoverable
Calcium	120	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00099	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.00029	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lithium	0.031		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0023	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0049	J	0.0050	0.00048	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	21.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.0		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	180		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	920		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-87226-1

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 - Cherokee

TestAmerica Job ID: 280-87226-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-87226-1	MW-7	Water	08/23/16 15:10	08/23/16 15:48
280-87226-2	MW-10	Water	08/23/16 12:55	08/23/16 15:48
280-87226-3	MW-13D	Water	08/23/16 09:40	08/23/16 15:48
280-87226-4	MW-13EB	Water	08/23/16 10:10	08/23/16 15:48
280-87226-5	MW-13	Water	08/23/16 09:40	08/23/16 15:48

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

Client Sample ID: MW-7
Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0011**	**J**	0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 19:15	1
Arsenic	**0.0056**		0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:15	1
Barium	**0.16**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:15	1
Beryllium	**0.0011**		0.0010	0.00040	mg/L		08/26/16 12:00	09/07/16 16:49	1
Boron	**1.6**	**B**	0.40	0.050	mg/L		08/26/16 12:00	09/07/16 11:38	20
Cadmium	**0.00068**	**J**	0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:15	1
Calcium	**240**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:15	1
Chromium	**0.036**		0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:15	1
Cobalt	**0.0075**		0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:15	1
Lead	**0.016**	**B**	0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:15	1
Lithium	**0.082**		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:15	1
Molybdenum	**0.011**		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:15	1
Selenium	**0.0036**	**J**	0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:15	1
Thallium	**0.00052**	**J**	0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:15	1

Client Sample ID: MW-10
Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0022**		0.0020	0.00027	mg/L		08/26/16 12:00	08/31/16 18:46	1
Arsenic	**0.0038**	**J**	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 18:46	1
Barium	**0.066**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 18:46	1
Beryllium	ND	F1	0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 18:46	1
Boron	**2.5**	**B**	1.0	0.13	mg/L		08/26/16 12:00	09/07/16 11:18	50
Cadmium	**0.00044**	**J**	0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 18:46	1
Calcium	**360**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 18:46	1
Chromium	**0.018**		0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 18:46	1
Cobalt	**0.0013**		0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 18:46	1
Lead	**0.00055**	**J B**	0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 18:46	1
Lithium	**0.093**		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 18:46	1
Molybdenum	**0.048**		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 18:46	1
Selenium	**0.0045**	**J**	0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 18:46	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 18:46	1

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
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 19:19	1
Arsenic	**0.00078**	**J**	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:19	1
Barium	**0.077**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:19	1
Beryllium	ND		0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:19	1
Boron	**0.67**	**B**	0.20	0.025	mg/L		08/26/16 12:00	09/07/16 11:42	10
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:19	1
Calcium	**120**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:19	1
Chromium	**0.0019**	**J**	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:19	1
Cobalt	**0.00036**	**J**	0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:19	1
Lead	**0.00038**	**J B**	0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:19	1
Lithium	**0.032**		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:19	1
Molybdenum	**0.0025**	**J**	0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:19	1

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

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	**0.0052**		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:19	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:19	1

Client Sample ID: MW-13EB
Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4
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 19:23	1
Arsenic	ND		0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:23	1
Barium	ND		0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:23	1
Beryllium	ND		0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:23	1
Boron	**0.0041**	**J B**	0.020	0.0025	mg/L		08/26/16 12:00	09/07/16 13:01	1
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:23	1
Calcium	**0.096**	**J B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:23	1
Chromium	ND		0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:23	1
Cobalt	ND		0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:23	1
Lead	ND		0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:23	1
Lithium	ND		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:23	1
Molybdenum	ND		0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:23	1
Selenium	ND		0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:23	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:23	1

Client Sample ID: MW-13
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5
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 19:27	1
Arsenic	**0.00073**	**J**	0.0050	0.00035	mg/L		08/26/16 12:00	08/31/16 19:27	1
Barium	**0.078**	**B**	0.0050	0.00052	mg/L		08/26/16 12:00	08/31/16 19:27	1
Beryllium	ND		0.0010	0.00040	mg/L		08/26/16 12:00	08/31/16 19:27	1
Boron	**0.63**	**B**	0.20	0.025	mg/L		08/26/16 12:00	09/07/16 13:06	10
Cadmium	ND		0.0010	0.00031	mg/L		08/26/16 12:00	08/31/16 19:27	1
Calcium	**120**	**B**	1.0	0.043	mg/L		08/26/16 12:00	08/31/16 19:27	1
Chromium	**0.00099**	**J**	0.0020	0.00026	mg/L		08/26/16 12:00	08/31/16 19:27	1
Cobalt	**0.00029**	**J**	0.0010	0.00013	mg/L		08/26/16 12:00	08/31/16 19:27	1
Lead	ND		0.0010	0.00016	mg/L		08/26/16 12:00	08/31/16 19:27	1
Lithium	**0.031**		0.0080	0.00016	mg/L		08/26/16 12:00	08/31/16 19:27	1
Molybdenum	**0.0023**	**J**	0.010	0.00051	mg/L		08/26/16 12:00	08/31/16 19:27	1
Selenium	**0.0049**	**J**	0.0050	0.00048	mg/L		08/26/16 12:00	08/31/16 19:27	1
Thallium	ND		0.0010	0.00028	mg/L		08/26/16 12:00	08/31/16 19:27	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		09/09/16 12:00	09/09/16 17:56	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-10
Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		09/09/16 12:00	09/09/16 18:02	1

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		09/09/16 12:00	09/09/16 18:05	1

Client Sample ID: MW-13EB
Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		09/09/16 12:00	09/09/16 18:07	1

Client Sample ID: MW-13
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		09/09/16 12:00	09/09/16 18:09	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			08/24/16 10:57	1
Temperature	21.1	HF	1.0	1.0	Degrees C			08/24/16 10:57	1
Chloride	600	B	15	1.3	mg/L			09/09/16 20:46	5
Fluoride	0.87		0.50	0.060	mg/L			09/09/16 20:26	1
Sulfate	430		25	1.2	mg/L			09/09/16 20:46	5
Total Dissolved Solids (TDS)	2000		20	9.4	mg/L			08/25/16 08:24	1
Total Suspended Solids	3000		500	140	mg/L			08/29/16 16:11	1

Client Sample ID: MW-10
Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	9.0	HF	0.1	0.1	SU			08/24/16 11:01	1
Temperature	20.9	HF	1.0	1.0	Degrees C			08/24/16 11:01	1
Chloride	350	B	15	1.3	mg/L			09/09/16 21:26	5
Fluoride	1.2		0.50	0.060	mg/L			09/09/16 21:06	1
Sulfate	1000	B	50	2.3	mg/L			09/13/16 11:13	10
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L			08/25/16 08:24	1
Total Suspended Solids	14		4.0	1.1	mg/L			08/29/16 16:11	1

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			08/24/16 11:13	1

General Chemistry (Continued)

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.1	HF	1.0	1.0	Degrees C			08/24/16 11:13	1
Chloride	190	B	3.0	0.25	mg/L			09/09/16 21:46	1
Fluoride	0.99		0.50	0.060	mg/L			09/09/16 21:46	1
Sulfate	180		25	1.2	mg/L			09/09/16 22:46	5
Total Dissolved Solids (TDS)	980		10	4.7	mg/L			08/25/16 08:24	1
Total Suspended Solids	5.2		4.0	1.1	mg/L			08/29/16 16:11	1

Client Sample ID: MW-13EB
Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU			08/24/16 11:22	1
Temperature	21.4	HF	1.0	1.0	Degrees C			08/24/16 11:22	1
Chloride	0.69	J B	3.0	0.25	mg/L			09/09/16 23:05	1
Fluoride	ND		0.50	0.060	mg/L			09/09/16 23:05	1
Sulfate	0.41	J	5.0	0.23	mg/L			09/09/16 23:05	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/25/16 08:24	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			08/29/16 16:11	1

Client Sample ID: MW-13
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			08/24/16 11:27	1
Temperature	21.3	HF	1.0	1.0	Degrees C			08/24/16 11:27	1
Chloride	190	B	3.0	0.25	mg/L			09/09/16 23:25	1
Fluoride	1.0		0.50	0.060	mg/L			09/09/16 23:25	1
Sulfate	180		25	1.2	mg/L			09/09/16 23:45	5
Total Dissolved Solids (TDS)	920		10	4.7	mg/L			08/25/16 08:24	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			08/29/16 16:11	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.15		0.285	0.303	1.00	0.277	pCi/L	08/30/16 18:26	09/21/16 20:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*52.4*		*40 - 110*	*08/30/16 18:26*	*09/21/16 20:01*	*1*

Client Sample ID: MW-10
Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.124		0.0625	0.0635	1.00	0.0798	pCi/L	08/30/16 18:26	09/21/16 20:01	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	85.2		40 - 110	08/30/16 18:26	09/21/16 20:01	1

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.335**		0.0896	0.0945	1.00	0.0859	pCi/L	08/30/16 18:26	09/21/16 20:01	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110	08/30/16 18:26	09/21/16 20:01	1

Client Sample ID: MW-13EB
Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0711	U	0.0547	0.0551	1.00	0.0811	pCi/L	08/30/16 18:26	09/21/16 20:01	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	86.3		40 - 110	08/30/16 18:26	09/21/16 20:01	1

Client Sample ID: MW-13
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.324**		0.0886	0.0933	1.00	0.0789	pCi/L	08/30/16 18:26	09/21/16 20:00	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		40 - 110	08/30/16 18:26	09/21/16 20:00	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**2.71**	**G**	1.11	1.14	1.00	1.58	pCi/L	08/30/16 18:50	09/14/16 16:36	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	52.4		40 - 110	08/30/16 18:50	09/14/16 16:36	1
Y Carrier	79.3		40 - 110	08/30/16 18:50	09/14/16 16:36	1

Client Sample ID: MW-10
Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.623**		0.288	0.293	1.00	0.413	pCi/L	08/30/16 18:50	09/14/16 16:36	1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	85.2		40 - 110	08/30/16 18:50	09/14/16 16:36	1
Y Carrier	83.7		40 - 110	08/30/16 18:50	09/14/16 16:36	1

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.350	U	0.253	0.255	1.00	0.394	pCi/L	08/30/16 18:50	09/14/16 16:37	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110	08/30/16 18:50	09/14/16 16:37	1
Y Carrier	82.6		40 - 110	08/30/16 18:50	09/14/16 16:37	1

Client Sample ID: MW-13EB
Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.107	U	0.212	0.212	1.00	0.403	pCi/L	08/30/16 18:50	09/14/16 16:37	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	86.3		40 - 110	08/30/16 18:50	09/14/16 16:37	1
Y Carrier	84.5		40 - 110	08/30/16 18:50	09/14/16 16:37	1

Client Sample ID: MW-13
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.257	U	0.245	0.246	1.00	0.395	pCi/L	08/30/16 18:50	09/14/16 16:38	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		40 - 110	08/30/16 18:50	09/14/16 16:38	1
Y Carrier	84.9		40 - 110	08/30/16 18:50	09/14/16 16:38	1

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

Client Sample ID: MW-7
Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**3.87**		1.15	1.18	5.00	1.58	pCi/L		09/23/16 06:04	1

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

Client Sample ID: MW-10
Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.747		0.294	0.300	5.00	0.413	pCi/L		09/23/16 06:04	1

Client Sample ID: MW-13D
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.685		0.269	0.272	5.00	0.394	pCi/L		09/23/16 06:04	1

Client Sample ID: MW-13EB
Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0363	U	0.219	0.219	5.00	0.403	pCi/L		09/23/16 06:04	1

Client Sample ID: MW-13
Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.581		0.261	0.263	5.00	0.395	pCi/L		09/23/16 06:04	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
Cadmium	ND		0.0010	0.00031	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
Chromium	ND		0.0020	0.00026	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
Lead	0.000194	J	0.0010	0.00016	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
Molybdenum	ND		0.010	0.00051	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

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
Beryllium	ND		0.0010	0.00040	mg/L		08/26/16 12:00	09/07/16 11:10	1
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
Cadmium	1.00	1.04		mg/L		104	80 - 120
Calcium	10.0	10.4		mg/L		104	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Cobalt	1.00	1.06		mg/L		106	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Lithium	0.100	0.0883		mg/L		88	80 - 120
Molybdenum	0.100	0.0978		mg/L		98	80 - 120
Selenium	1.00	1.01		mg/L		101	80 - 120
Thallium	0.250	0.251		mg/L		100	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
Beryllium	1.00	1.01		mg/L		101	80 - 120
Boron	0.100	0.102		mg/L		102	80 - 120

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

Lab Sample ID: 280-87226-2 MS
Matrix: Water
Analysis Batch: 245137

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 244446

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0022		0.100	0.104		mg/L		102	75 - 125
Arsenic	0.0038	J	1.00	1.02		mg/L		101	75 - 125
Barium	0.066	B	1.00	1.10	B	mg/L		104	75 - 125
Beryllium	ND	F1	1.00	1.31	F1	mg/L		131	75 - 125
Cadmium	0.00044	J	1.00	0.963		mg/L		96	75 - 125
Calcium	360	B	10.0	365	4 B	mg/L		55	75 - 125
Chromium	0.018		1.00	0.989		mg/L		97	75 - 125
Cobalt	0.0013		1.00	0.993		mg/L		99	75 - 125
Lead	0.00055	J B	1.00	0.931		mg/L		93	75 - 125
Lithium	0.093		0.100	0.183		mg/L		90	75 - 125
Molybdenum	0.048		0.100	0.151		mg/L		103	75 - 125
Selenium	0.0045	J	1.00	1.01		mg/L		100	75 - 125
Thallium	ND		0.250	0.234		mg/L		93	75 - 125

Lab Sample ID: 280-87226-2 MS
Matrix: Water
Analysis Batch: 245809

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 244446

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	2.5	B	0.100	2.65	4	mg/L		199	75 - 125

Lab Sample ID: 280-87226-2 MSD
Matrix: Water
Analysis Batch: 245137

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 244446

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.0022		0.100	0.104		mg/L		102	75 - 125	1	20
Arsenic	0.0038	J	1.00	1.03		mg/L		102	75 - 125	1	20
Barium	0.066	B	1.00	1.11	B	mg/L		104	75 - 125	1	20
Beryllium	ND	F1	1.00	1.26	F1	mg/L		126	75 - 125	3	20
Cadmium	0.00044	J	1.00	0.967		mg/L		97	75 - 125	0	20
Calcium	360	B	10.0	372	4 B	mg/L		130	75 - 125	2	20
Chromium	0.018		1.00	0.989		mg/L		97	75 - 125	0	20
Cobalt	0.0013		1.00	0.980		mg/L		98	75 - 125	1	20
Lead	0.00055	J B	1.00	0.947		mg/L		95	75 - 125	2	20
Lithium	0.093		0.100	0.184		mg/L		91	75 - 125	1	20
Molybdenum	0.048		0.100	0.153		mg/L		105	75 - 125	1	20
Selenium	0.0045	J	1.00	1.02		mg/L		101	75 - 125	1	20
Thallium	ND		0.250	0.234		mg/L		94	75 - 125	0	20

Lab Sample ID: 280-87226-2 MSD
Matrix: Water
Analysis Batch: 245809

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 244446

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	2.5	B	0.100	2.56	4	mg/L		106	75 - 125	4	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-341477/1-A
Matrix: Water
Analysis Batch: 341644

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 341477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		09/09/16 12:00	09/09/16 17:22	1

Lab Sample ID: LCS 280-341477/2-A
Matrix: Water
Analysis Batch: 341644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 341477

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

Lab Sample ID: LCSD 280-341477/3-A
Matrix: Water
Analysis Batch: 341644

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 341477

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	5.00	5.24		ug/L		105	84 - 120	5	15

Method: 9040B - pH

Lab Sample ID: LCS 280-339324/28
Matrix: Water
Analysis Batch: 339324

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 280-339324/51
Matrix: Water
Analysis Batch: 339324

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: 280-87226-3 DU
Matrix: Water
Analysis Batch: 339324

Client Sample ID: MW-13D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.5	HF	7.6		SU		1	5
Temperature	21.1	HF	21.4		Degrees C		1	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-341503/13
Matrix: Water
Analysis Batch: 341503

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.665	J	3.0	0.25	mg/L			09/09/16 14:48	1
Fluoride	ND		0.50	0.060	mg/L			09/09/16 14:48	1

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

Lab Sample ID: MB 280-341503/13
Matrix: Water
Analysis Batch: 341503

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	0.23	mg/L			09/09/16 14:48	1

Lab Sample ID: LCS 280-341503/11
Matrix: Water
Analysis Batch: 341503

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	96.1		mg/L		96	90 - 110
Fluoride	5.00	4.92		mg/L		98	90 - 110
Sulfate	100	95.9		mg/L		96	90 - 110

Lab Sample ID: LCSD 280-341503/12
Matrix: Water
Analysis Batch: 341503

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	96.2		mg/L		96	90 - 110	0	10
Fluoride	5.00	4.94		mg/L		99	90 - 110	0	10
Sulfate	100	95.9		mg/L		96	90 - 110	0	10

Lab Sample ID: MRL 280-341503/10
Matrix: Water
Analysis Batch: 341503

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.37	J	mg/L		95	50 - 150
Fluoride	0.200	0.194	J	mg/L		97	50 - 150
Sulfate	2.50	2.42	J	mg/L		97	50 - 150

Lab Sample ID: MB 280-341858/6
Matrix: Water
Analysis Batch: 341858

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.520	J	5.0	0.23	mg/L			09/13/16 10:57	1

Lab Sample ID: LCS 280-341858/4
Matrix: Water
Analysis Batch: 341858

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	100	99.4		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-341858/5
Matrix: Water
Analysis Batch: 341858

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	99.3		mg/L		99	90 - 110	0	10

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

Lab Sample ID: MRL 280-341858/3
Matrix: Water
Analysis Batch: 341858

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	2.50	2.28	J	mg/L		91	50 - 150

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

Lab Sample ID: MB 280-339511/1
Matrix: Water
Analysis Batch: 339511

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			08/25/16 08:24	1

Lab Sample ID: LCS 280-339511/2
Matrix: Water
Analysis Batch: 339511

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	479		mg/L		96	86 - 110

Lab Sample ID: LCSD 280-339511/3
Matrix: Water
Analysis Batch: 339511

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	490		mg/L		98	86 - 110	2	20

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

Lab Sample ID: MB 280-339999/2
Matrix: Water
Analysis Batch: 339999

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			08/29/16 16:11	1

Lab Sample ID: LCS 280-339999/1
Matrix: Water
Analysis Batch: 339999

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.0		mg/L		92	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-267408/1-A
Matrix: Water
Analysis Batch: 270875

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 267408

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03607	U	0.0527	0.0528	1.00	0.0896	pCi/L	08/30/16 18:26	09/21/16 16:04	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*08/30/16 18:26*	*09/21/16 16:04*	*1*

Lab Sample ID: LCS 160-267408/2-A
Matrix: Water
Analysis Batch: 271155

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 267408

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.2	13.64		1.33	1.00	0.0752	pCi/L	122	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*84.6*		*40 - 110*

Lab Sample ID: LCSD 160-267408/3-A
Matrix: Water
Analysis Batch: 270875

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 267408

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.2	14.57		1.42	1.00	0.0823	pCi/L	131	68 - 137	0.34	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*75.5*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-267411/1-A
Matrix: Water
Analysis Batch: 269644

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 267411

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1552	U	0.267	0.268	1.00	0.452	pCi/L	08/30/16 18:50	09/14/16 16:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*08/30/16 18:50*	*09/14/16 16:36*	*1*
Y Carrier	*81.9*		*40 - 110*	*08/30/16 18:50*	*09/14/16 16:36*	*1*

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

Lab Sample ID: LCS 160-267411/2-A
Matrix: Water
Analysis Batch: 269644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 267411

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			14.6	17.28		1.85	1.00	0.405	pCi/L	119	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*84.6*		*40 - 110*
Y Carrier	*83.4*		*40 - 110*

Lab Sample ID: LCSD 160-267411/3-A
Matrix: Water
Analysis Batch: 269644

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 267411

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			14.6	17.37		1.90	1.00	0.446	pCi/L	119	56 - 140	0.02	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*75.5*		*40 - 110*
Y Carrier	*80.7*		*40 - 110*

Metals

Prep Batch: 244446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total Recoverable	Water	3005A	
280-87226-2	MW-10	Total Recoverable	Water	3005A	
280-87226-3	MW-13D	Total Recoverable	Water	3005A	
280-87226-4	MW-13EB	Total Recoverable	Water	3005A	
280-87226-5	MW-13	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	
280-87226-2 MS	MW-10	Total Recoverable	Water	3005A	
280-87226-2 MSD	MW-10	Total Recoverable	Water	3005A	

Analysis Batch: 245137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total Recoverable	Water	6020A	244446
280-87226-2	MW-10	Total Recoverable	Water	6020A	244446
280-87226-3	MW-13D	Total Recoverable	Water	6020A	244446
280-87226-4	MW-13EB	Total Recoverable	Water	6020A	244446
280-87226-5	MW-13	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
280-87226-2 MS	MW-10	Total Recoverable	Water	6020A	244446
280-87226-2 MSD	MW-10	Total Recoverable	Water	6020A	244446

Analysis Batch: 245809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total Recoverable	Water	6020A	244446
280-87226-2	MW-10	Total Recoverable	Water	6020A	244446
280-87226-3	MW-13D	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
280-87226-2 MS	MW-10	Total Recoverable	Water	6020A	244446
280-87226-2 MSD	MW-10	Total Recoverable	Water	6020A	244446

Analysis Batch: 245905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total Recoverable	Water	6020A	244446
280-87226-4	MW-13EB	Total Recoverable	Water	6020A	244446
280-87226-5	MW-13	Total Recoverable	Water	6020A	244446

Prep Batch: 341477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	7470A	
280-87226-2	MW-10	Total/NA	Water	7470A	
280-87226-3	MW-13D	Total/NA	Water	7470A	
280-87226-4	MW-13EB	Total/NA	Water	7470A	
280-87226-5	MW-13	Total/NA	Water	7470A	
MB 280-341477/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-341477/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-341477/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Metals (Continued)

Analysis Batch: 341644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	7470A	341477
280-87226-2	MW-10	Total/NA	Water	7470A	341477
280-87226-3	MW-13D	Total/NA	Water	7470A	341477
280-87226-4	MW-13EB	Total/NA	Water	7470A	341477
280-87226-5	MW-13	Total/NA	Water	7470A	341477
MB 280-341477/1-A	Method Blank	Total/NA	Water	7470A	341477
LCS 280-341477/2-A	Lab Control Sample	Total/NA	Water	7470A	341477
LCSD 280-341477/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	341477

General Chemistry

Analysis Batch: 339324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	9040B	
280-87226-2	MW-10	Total/NA	Water	9040B	
280-87226-3	MW-13D	Total/NA	Water	9040B	
280-87226-4	MW-13EB	Total/NA	Water	9040B	
280-87226-5	MW-13	Total/NA	Water	9040B	
LCS 280-339324/28	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-339324/51	Lab Control Sample	Total/NA	Water	9040B	
280-87226-3 DU	MW-13D	Total/NA	Water	9040B	

Analysis Batch: 339511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	SM 2540C	
280-87226-2	MW-10	Total/NA	Water	SM 2540C	
280-87226-3	MW-13D	Total/NA	Water	SM 2540C	
280-87226-4	MW-13EB	Total/NA	Water	SM 2540C	
280-87226-5	MW-13	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: 339999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	SM 2540D	
280-87226-2	MW-10	Total/NA	Water	SM 2540D	
280-87226-3	MW-13D	Total/NA	Water	SM 2540D	
280-87226-4	MW-13EB	Total/NA	Water	SM 2540D	
280-87226-5	MW-13	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	

Analysis Batch: 341503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	9056A	
280-87226-1	MW-7	Total/NA	Water	9056A	
280-87226-2	MW-10	Total/NA	Water	9056A	
280-87226-2	MW-10	Total/NA	Water	9056A	
280-87226-3	MW-13D	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 341503 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-3	MW-13D	Total/NA	Water	9056A	
280-87226-4	MW-13EB	Total/NA	Water	9056A	
280-87226-5	MW-13	Total/NA	Water	9056A	
280-87226-5	MW-13	Total/NA	Water	9056A	
MB 280-341503/13	Method Blank	Total/NA	Water	9056A	
LCS 280-341503/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-341503/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-341503/10	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 341858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-2	MW-10	Total/NA	Water	9056A	
MB 280-341858/6	Method Blank	Total/NA	Water	9056A	
LCS 280-341858/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-341858/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-341858/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 267408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	PrecSep-21	
280-87226-2	MW-10	Total/NA	Water	PrecSep-21	
280-87226-3	MW-13D	Total/NA	Water	PrecSep-21	
280-87226-4	MW-13EB	Total/NA	Water	PrecSep-21	
280-87226-5	MW-13	Total/NA	Water	PrecSep-21	
MB 160-267408/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-267408/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-267408/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 267411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87226-1	MW-7	Total/NA	Water	PrecSep_0	
280-87226-2	MW-10	Total/NA	Water	PrecSep_0	
280-87226-3	MW-13D	Total/NA	Water	PrecSep_0	
280-87226-4	MW-13EB	Total/NA	Water	PrecSep_0	
280-87226-5	MW-13	Total/NA	Water	PrecSep_0	
MB 160-267411/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-267411/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-267411/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-87226-1

Client Sample ID: MW-7

Date Collected: 08/23/16 15:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-1

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:15	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			245809	09/07/16 11:38	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			245905	09/07/16 16:49	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	341477	09/09/16 12:00	CDH	TAL DEN
Total/NA	Analysis	7470A		1			341644	09/09/16 17:56	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339324	08/24/16 10:57	IEU	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	341503	09/09/16 20:26	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	341503	09/09/16 20:46	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	339511	08/25/16 08:24	KMS	TAL DEN
Total/NA	Analysis	SM 2540D		1	2 mL	250 mL	339999	08/29/16 16:11	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			500.47 mL	1.0 g	267408	08/30/16 18:26	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 20:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.47 mL	1.0 g	267411	08/30/16 18:50	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:36	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271225	09/23/16 06:04	ALS	TAL SL

Client Sample ID: MW-10

Date Collected: 08/23/16 12:55
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-2

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 18:46	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		50			245809	09/07/16 11:18	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	341477	09/09/16 12:00	CDH	TAL DEN
Total/NA	Analysis	7470A		1			341644	09/09/16 18:02	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339324	08/24/16 11:01	IEU	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	341858	09/13/16 11:13	AFB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	341503	09/09/16 21:06	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	341503	09/09/16 21:26	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 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			999.11 mL	1.0 g	267408	08/30/16 18:26	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 20:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.11 mL	1.0 g	267411	08/30/16 18:50	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:36	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271225	09/23/16 06:04	ALS	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-87226-1

Client Sample ID: MW-13D

Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-3

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:19	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		10			245809	09/07/16 11:42	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	341477	09/09/16 12:00	CDH	TAL DEN
Total/NA	Analysis	7470A		1			341644	09/09/16 18:05	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339324	08/24/16 11:13	IEU	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	341503	09/09/16 21:46	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	341503	09/09/16 22:46	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 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			999.26 mL	1.0 g	267408	08/30/16 18:26	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 20:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.26 mL	1.0 g	267411	08/30/16 18:50	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:37	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271225	09/23/16 06:04	ALS	TAL SL

Client Sample ID: MW-13EB

Date Collected: 08/23/16 10:10
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-4

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	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			245137	08/31/16 19:23	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			245905	09/07/16 13:01	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	341477	09/09/16 12:00	CDH	TAL DEN
Total/NA	Analysis	7470A		1			341644	09/09/16 18:07	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339324	08/24/16 11:22	IEU	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	341503	09/09/16 23:05	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 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			1000.67 mL	1.0 g	267408	08/30/16 18:26	MCJ	TAL SL
Total/NA	Analysis	9315		1			270875	09/21/16 20:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.67 mL	1.0 g	267411	08/30/16 18:50	MCJ	TAL SL
Total/NA	Analysis	9320		1			269644	09/14/16 16:37	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271225	09/23/16 06:04	ALS	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-87226-1

Client Sample ID: MW-13

Date Collected: 08/23/16 09:40
Date Received: 08/23/16 15:48

Lab Sample ID: 280-87226-5

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 19:27	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	244446	08/26/16 12:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		10			245905	09/07/16 13:06	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	341477	09/09/16 12:00	CDH	TAL DEN
Total/NA	Analysis	7470A		1			341644	09/09/16 18:09	CDH	TAL DEN
Total/NA	Analysis	9040B		1			339324	08/24/16 11:27	IEU	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	341503	09/09/16 23:25	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	341503	09/09/16 23:45	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 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			1000.70 mL	1.0 g	267408	08/30/16 18:26	MCJ	TAL SL
Total/NA	Analysis	9315		1			270871	09/21/16 20:00	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.70 mL	1.0 g	267411	08/30/16 18:50	MCJ	TAL SL
Total/NA	Analysis	9320		1			269645	09/14/16 16:38	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			271225	09/23/16 06:04	ALS	TAL SL

Laboratory References:

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

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

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

Certification Summary

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

TestAmerica Job ID: 280-87226-1

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
Oregon	NELAP	10	4025	01-09-17

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

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
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

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-87226-1

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
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.

erica Denver
ow Street
CO 80002
(303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Justin Bills	Lab PM: Kupper, Stephanie K	Carrier Tracking No(s):	COC No: 1
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 - Cherokee	Project #: 28014371			
Site: Colorado	SSOW#:			

Analysis Requested

280-87226 Chain of Custody

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-7	8/23/16	1510	G	Water		N	1	2	1	1	2	7	
~~MW-8~~ JB				Water		N							
~~MW-9~~ JB				Water		N							
MW-10	8/23/16	1255	G	Water	N	N	1	2	1	1	2	7	
~~Field Duplicate~~ MW-13D	8/23/16	0940	G	Water	N	N	1	2	1	1	2	7	
~~Equipment Blank~~ MW-13EB	8/23/16	1010	G	Water	N	N	1	2	1	1	2	7	
MW-13	8/23/16	0940	G	Water	N	N	1	2	1	1	2	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
1		8/23/16 1546			8-23-16 1578	TAD
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Cooler Temperature(s) °C and Other Remarks: 3.1, 2.2 IR 50.0 Transfer RP 8-23-16

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

Chain of Custody Record

280-87226 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Steph	COC No: 280-365181.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.			Job #: 280-87226-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 9/22/2016		
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 - Cherokee	Project #: 28014371		
Site: Xcel Energy CCR - Cherokee Station	SSOW#:		

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-87226-1)	8/23/16	15:10 Mountain		Water			X	X	X	2	
MW-10 (280-87226-2)	8/23/16	12:55 Mountain		Water			X	X	X	2	
MW-13D (280-87226-3)	8/23/16	09:40 Mountain		Water			X	X	X	2	
MW-13EB (280-87226-4)	8/23/16	10:10 Mountain		Water			X	X	X	2	
MW-13 (280-87226-5)	8/23/16	09:40 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: 8/25/16 1445	Company	Received by:	Date/Time: 8/25/16 0920	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

3.0/4.0

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: 280-365182.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 280-87226-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 9/19/2016			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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:

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 14 Metals (Includes B and Ca) - 1/2 -SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7 (280-87226-1)	8/23/16	15:10 Mountain		Water			X	1	Use Collision Cell
MW-10 (280-87226-2)	8/23/16	12:55 Mountain		Water			X	1	Use Collision Cell
MW-13D (280-87226-3)	8/23/16	09:40 Mountain		Water			X	1	Use Collision Cell
MW-13EB (280-87226-4)	8/23/16	10:10 Mountain		Water			X	1	Use Collision Cell
MW-13 (280-87226-5)	8/23/16	09:40 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
1		8/24/16 1445			8/25/16 910	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

9/23/2016

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

Canton Facility

Cooler unpacked by:

Client Denver Site Name _____

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

☐ See Multiple Cooler Form

1. Cooler temperature upon receipt
   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 dji

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-87226-1

Login Number: 87226
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.	False	Limited volume received.
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: 280-87226-1

Login Number: 87226
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 - Cherokee

TestAmerica Job ID: 280-87226-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
280-87226-1	MW-7	52.4
280-87226-2	MW-10	85.2
280-87226-3	MW-13D	87.7
280-87226-4	MW-13EB	86.3
280-87226-5	MW-13	81.8
LCS 160-267408/2-A	Lab Control Sample	84.6
LCSD 160-267408/3-A	Lab Control Sample Dup	75.5
MB 160-267408/1-A	Method Blank	83.5

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)
280-87226-1	MW-7	52.4	79.3
280-87226-2	MW-10	85.2	83.7
280-87226-3	MW-13D	87.7	82.6
280-87226-4	MW-13EB	86.3	84.5
280-87226-5	MW-13	81.8	84.9
LCS 160-267411/2-A	Lab Control Sample	84.6	83.4
LCSD 160-267411/3-A	Lab Control Sample Dup	75.5	80.7
MB 160-267411/1-A	Method Blank	83.5	81.9

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: 280-90696-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
12/15/2016 4:36:02 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 - Cherokee

TestAmerica Job ID: 280-90696-1

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.
F1	MS and/or MSD Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 280-90696-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-90696-1

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 11/8/2016 at 5:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.3º C, 0.9º C and 1.1º C.

Per client request, Sample ID Field Duplicate was changed to MW-13D and Sample ID Equipment Blank was changed to MW-9EB.

TOTAL RECOVERABLE METALS

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/11/2016 and 11/12/2016 and analyzed on 11/14/2016.

Boron failed the recovery criteria high for the MS and MSD of sample MW-8 (280-90696-1) in batch 240-255599. 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 RECOVERABLE METALS (ICPMS)

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/11/2016, 11/12/2016 and 12/08/2016 and analyzed on 11/19/2016, 12/02/2016, 12/09/2016 and 12/12/2016.

Lead was detected in method blank MB 240-255364/1-A at a level exceeding the reporting limit. 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 and Lithium were detected in method blank MB 240-255364/1-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 Lead were detected in method blank MB 240-255444/1-A at levels that were above the method detection limit but

Job ID: 280-90696-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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.

Lead was detected in method blank MB 240-258623/1-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.

Calcium and Molybdenum failed the recovery criteria high for the MS of sample MW-8 (280-90696-1) in batch 240-258041. Calcium failed the recovery criteria high for the MSD. 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-9 (280-90696-2)[5X] and MW-9EB (280-90696-5)[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 MERCURY

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 11/22/2016.

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

TOTAL DISSOLVED SOLIDS

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/11/2016 and 11/14/2016.

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

TOTAL SUSPENDED SOLIDS

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/10/2016.

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

CORROSIVITY (PH)

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 11/16/2016 and 11/21/2016.

Analysis for pH was done twice for sample MW-9EB (280-90696-5), and the pH did not stabilize in both analyses. Results are consistent, so they are reported.

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

ANIONS (28 DAYS)

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 12/02/2016 and 12/03/2016.

Chloride failed the recovery criteria high for the MSD of sample 280-91667-11 in batch 280-353988. 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: 280-90696-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples MW-8 (280-90696-1)[10X], MW-9 (280-90696-2)[10X], MW-10 (280-90696-3)[10X], MW-13D (280-90696-4)[5X] and MW-13 (280-90696-6)[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.

RADIUM-226 (GFPC)

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 11/11/2016 and analyzed on 12/13/2016.

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

RADIUM-228

Samples MW-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 11/11/2016 and analyzed on 12/13/2016.

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-8 (280-90696-1), MW-9 (280-90696-2), MW-10 (280-90696-3), MW-13D (280-90696-4), MW-9EB (280-90696-5) and MW-13 (280-90696-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 12/15/2016.

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 - Cherokee

TestAmerica Job ID: 280-90696-1

Client Sample ID: MW-8 — Lab Sample ID: 280-90696-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	4100		200	8.1	ug/L	1		6010C	Total Recoverable
Antimony	0.00030	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0030	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.050		0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.00090	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	160	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.0020		0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0040		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.0022	B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0085	J F1	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.019		0.0050	0.00048	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	500		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1500		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	29		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-90696-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2400		200	8.1	ug/L	1		6010C	Total Recoverable
Antimony	0.0015	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0031	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.043		0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.0016		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	290	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00026	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0011		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00083	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.081	B	0.040	0.00080	mg/L	5		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-9 (Continued) — Lab Sample ID: 280-90696-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.033		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0049	J	0.0050	0.00048	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	490		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.7		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	960		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2300		20	9.4	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-10 — Lab Sample ID: 280-90696-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1300		200	8.1	ug/L	1		6010C	Total Recoverable
Antimony	0.0024		0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0032	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.075	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.00090	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	270	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00043	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0019		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.031		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0043	J	0.0050	0.00048	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.7	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	490		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	920		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2200		20	9.4	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-13D — Lab Sample ID: 280-90696-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	730		200	8.1	ug/L	1		6010C	Total Recoverable
Arsenic	0.00077	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.099		0.0050	0.00052	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 - Cherokee

TestAmerica Job ID: 280-90696-1

Client Sample ID: MW-13D (Continued) — Lab Sample ID: 280-90696-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	180	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00032	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.00028	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00047	J B	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.036		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0018	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0050		0.0050	0.00048	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	23.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	240		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1100		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9EB — Lab Sample ID: 280-90696-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	0.064	J B	1.0	0.043	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	27		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-90696-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	730		200	8.1	ug/L	1		6010C	Total Recoverable
Arsenic	0.00075	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.10		0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	180	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00030	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.00024	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0018	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0051		0.0050	0.00048	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	23.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: MW-13 (Continued)

Lab Sample ID: 280-90696-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	240		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1100		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 - Cherokee

TestAmerica Job ID: 280-90696-1

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 - Cherokee

TestAmerica Job ID: 280-90696-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-90696-1	MW-8	Ground Water	11/08/16 12:15	11/08/16 17:15
280-90696-2	MW-9	Ground Water	11/07/16 16:40	11/08/16 17:15
280-90696-3	MW-10	Ground Water	11/07/16 15:15	11/08/16 17:15
280-90696-4	MW-13D	Ground Water	11/07/16 12:00	11/08/16 17:15
280-90696-5	MW-9EB	Water	11/08/16 10:30	11/08/16 17:15
280-90696-6	MW-13	Ground Water	11/07/16 11:45	11/08/16 17:15

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

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**4100**		200	8.1	ug/L		11/11/16 14:00	11/14/16 18:35	1

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2400**		200	8.1	ug/L		11/11/16 14:00	11/14/16 19:13	1

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1300**		200	8.1	ug/L		11/12/16 15:00	11/14/16 18:22	1

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**730**		200	8.1	ug/L		11/11/16 14:00	11/14/16 19:18	1

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		200	8.1	ug/L		11/11/16 14:00	11/14/16 19:22	1

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**730**		200	8.1	ug/L		11/11/16 14:00	11/14/16 19:26	1

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

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00030**	**J**	0.0020	0.00027	mg/L		11/11/16 14:00	12/02/16 18:30	1
Arsenic	**0.0030**	**J**	0.0050	0.00035	mg/L		11/11/16 14:00	12/02/16 18:30	1
Barium	**0.050**		0.0050	0.00052	mg/L		11/11/16 14:00	12/02/16 18:30	1
Beryllium	ND		0.0010	0.00040	mg/L		11/11/16 14:00	12/02/16 18:30	1
Cadmium	**0.00090**	**J**	0.0010	0.00031	mg/L		11/11/16 14:00	12/02/16 18:30	1
Calcium	**160**	**B**	1.0	0.043	mg/L		11/11/16 14:00	12/02/16 18:30	1
Chromium	**0.0020**		0.0020	0.00026	mg/L		11/11/16 14:00	12/02/16 18:30	1
Cobalt	**0.0040**		0.0010	0.00013	mg/L		11/11/16 14:00	12/02/16 18:30	1
Lead	**0.0022**	**B**	0.0010	0.00016	mg/L		12/08/16 14:00	12/09/16 10:58	1
Lithium	**0.11**		0.0080	0.00016	mg/L		12/08/16 14:00	12/09/16 10:58	1
Molybdenum	**0.0085**	**J F1**	0.010	0.00051	mg/L		11/11/16 14:00	12/02/16 18:30	1
Selenium	**0.019**		0.0050	0.00048	mg/L		11/11/16 14:00	12/02/16 18:30	1
Thallium	ND		0.0010	0.00028	mg/L		11/11/16 14:00	12/02/16 18:30	1

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0015	J	0.0020	0.00027	mg/L		11/11/16 14:00	12/02/16 18:58	1
Arsenic	0.0031	J	0.0050	0.00035	mg/L		11/11/16 14:00	12/02/16 18:58	1
Barium	0.043		0.0050	0.00052	mg/L		11/11/16 14:00	12/02/16 18:58	1
Beryllium	ND		0.0010	0.00040	mg/L		11/11/16 14:00	12/02/16 18:58	1
Cadmium	0.0016		0.0010	0.00031	mg/L		11/11/16 14:00	12/02/16 18:58	1
Calcium	290	B	1.0	0.043	mg/L		11/11/16 14:00	12/02/16 18:58	1
Chromium	0.00026	J	0.0020	0.00026	mg/L		11/11/16 14:00	12/02/16 18:58	1
Cobalt	0.0011		0.0010	0.00013	mg/L		11/11/16 14:00	12/02/16 18:58	1
Lead	0.00083	J B	0.0010	0.00016	mg/L		11/11/16 14:00	12/02/16 18:58	1
Lithium	0.081	B	0.040	0.00080	mg/L		11/11/16 14:00	12/12/16 15:05	5
Molybdenum	0.033		0.010	0.00051	mg/L		11/11/16 14:00	12/02/16 18:58	1
Selenium	0.0049	J	0.0050	0.00048	mg/L		11/11/16 14:00	12/02/16 18:58	1
Thallium	ND		0.0010	0.00028	mg/L		11/11/16 14:00	12/02/16 18:58	1

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0024		0.0020	0.00027	mg/L		11/12/16 15:00	11/19/16 21:28	1
Arsenic	0.0032	J	0.0050	0.00035	mg/L		11/12/16 15:00	11/19/16 21:28	1
Barium	0.075	B	0.0050	0.00052	mg/L		11/12/16 15:00	11/19/16 21:28	1
Beryllium	ND		0.0010	0.00040	mg/L		11/12/16 15:00	11/19/16 21:28	1
Cadmium	0.00090	J	0.0010	0.00031	mg/L		11/12/16 15:00	11/19/16 21:28	1
Calcium	270	B	1.0	0.043	mg/L		11/12/16 15:00	11/19/16 21:28	1
Chromium	0.00043	J	0.0020	0.00026	mg/L		11/12/16 15:00	11/19/16 21:28	1
Cobalt	0.0019		0.0010	0.00013	mg/L		11/12/16 15:00	11/19/16 21:28	1
Lead	ND		0.0010	0.00016	mg/L		11/12/16 15:00	11/19/16 21:28	1
Lithium	0.11		0.0080	0.00016	mg/L		11/12/16 15:00	11/19/16 21:28	1
Molybdenum	0.031		0.010	0.00051	mg/L		11/12/16 15:00	11/19/16 21:28	1
Selenium	0.0043	J	0.0050	0.00048	mg/L		11/12/16 15:00	11/19/16 21:28	1
Thallium	ND		0.0010	0.00028	mg/L		11/12/16 15:00	11/19/16 21:28	1

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/11/16 14:00	12/02/16 19:11	1
Arsenic	0.00077	J	0.0050	0.00035	mg/L		11/11/16 14:00	12/02/16 19:11	1
Barium	0.099		0.0050	0.00052	mg/L		11/11/16 14:00	12/02/16 19:11	1
Beryllium	ND		0.0010	0.00040	mg/L		11/11/16 14:00	12/02/16 19:11	1
Cadmium	ND		0.0010	0.00031	mg/L		11/11/16 14:00	12/02/16 19:11	1
Calcium	180	B	1.0	0.043	mg/L		11/11/16 14:00	12/02/16 19:11	1
Chromium	0.00032	J	0.0020	0.00026	mg/L		11/11/16 14:00	12/02/16 19:11	1
Cobalt	0.00028	J	0.0010	0.00013	mg/L		11/11/16 14:00	12/02/16 19:11	1
Lead	0.00047	J B	0.0010	0.00016	mg/L		12/08/16 14:00	12/09/16 11:35	1
Lithium	0.036		0.0080	0.00016	mg/L		12/08/16 14:00	12/09/16 11:35	1
Molybdenum	0.0018	J	0.010	0.00051	mg/L		11/11/16 14:00	12/02/16 19:11	1
Selenium	0.0050		0.0050	0.00048	mg/L		11/11/16 14:00	12/02/16 19:11	1
Thallium	ND		0.0010	0.00028	mg/L		11/11/16 14:00	12/02/16 19:11	1

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

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/11/16 14:00	12/02/16 19:15	1
Arsenic	ND		0.0050	0.00035	mg/L		11/11/16 14:00	12/02/16 19:15	1
Barium	ND		0.0050	0.00052	mg/L		11/11/16 14:00	12/02/16 19:15	1
Beryllium	ND		0.0010	0.00040	mg/L		11/11/16 14:00	12/02/16 19:15	1
Cadmium	ND		0.0010	0.00031	mg/L		11/11/16 14:00	12/02/16 19:15	1
Calcium	**0.064**	**J B**	1.0	0.043	mg/L		11/11/16 14:00	12/02/16 19:15	1
Chromium	ND		0.0020	0.00026	mg/L		11/11/16 14:00	12/02/16 19:15	1
Cobalt	ND		0.0010	0.00013	mg/L		11/11/16 14:00	12/02/16 19:15	1
Lead	ND		0.0010	0.00016	mg/L		11/11/16 14:00	12/02/16 19:15	1
Lithium	ND		0.040	0.00080	mg/L		11/11/16 14:00	12/12/16 15:09	5
Molybdenum	ND		0.010	0.00051	mg/L		11/11/16 14:00	12/02/16 19:15	1
Selenium	ND		0.0050	0.00048	mg/L		11/11/16 14:00	12/02/16 19:15	1
Thallium	ND		0.0010	0.00028	mg/L		11/11/16 14:00	12/02/16 19:15	1

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/11/16 14:00	12/02/16 19:19	1
Arsenic	**0.00075**	**J**	0.0050	0.00035	mg/L		11/11/16 14:00	12/02/16 19:19	1
Barium	**0.10**		0.0050	0.00052	mg/L		11/11/16 14:00	12/02/16 19:19	1
Beryllium	ND		0.0010	0.00040	mg/L		11/11/16 14:00	12/02/16 19:19	1
Cadmium	ND		0.0010	0.00031	mg/L		11/11/16 14:00	12/02/16 19:19	1
Calcium	**180**	**B**	1.0	0.043	mg/L		11/11/16 14:00	12/02/16 19:19	1
Chromium	**0.00030**	**J**	0.0020	0.00026	mg/L		11/11/16 14:00	12/02/16 19:19	1
Cobalt	**0.00024**	**J**	0.0010	0.00013	mg/L		11/11/16 14:00	12/02/16 19:19	1
Lead	ND		0.0010	0.00016	mg/L		11/11/16 14:00	12/02/16 19:19	1
Lithium	ND		0.0080	0.00016	mg/L		11/11/16 14:00	12/09/16 12:17	1
Molybdenum	**0.0018**	**J**	0.010	0.00051	mg/L		11/11/16 14:00	12/02/16 19:19	1
Selenium	**0.0051**		0.0050	0.00048	mg/L		11/11/16 14:00	12/02/16 19:19	1
Thallium	ND		0.0010	0.00028	mg/L		11/11/16 14:00	12/02/16 19:19	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 18:02	1

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 18:09	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 18:11	1

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 18:13	1

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 18:20	1

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 18:22	1

General Chemistry

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			11/16/16 15:51	1
Temperature	23.1	HF	1.0	1.0	Degrees C			11/16/16 15:51	1
Chloride	500		30	2.5	mg/L			12/02/16 23:28	10
Fluoride	1.2		0.50	0.060	mg/L			12/02/16 16:09	1
Sulfate	1500		50	2.3	mg/L			12/02/16 23:28	10
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L			11/14/16 10:35	1
Total Suspended Solids	29		4.0	1.1	mg/L			11/10/16 16:34	1

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			11/16/16 15:56	1
Temperature	23.0	HF	1.0	1.0	Degrees C			11/16/16 15:56	1
Chloride	490		30	2.5	mg/L			12/02/16 23:46	10
Fluoride	2.7		0.50	0.060	mg/L			12/02/16 16:27	1
Sulfate	960		50	2.3	mg/L			12/02/16 23:46	10
Total Dissolved Solids (TDS)	2300		20	9.4	mg/L			11/11/16 10:13	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			11/10/16 16:34	1

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

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			11/16/16 15:59	1

General Chemistry (Continued)

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	23.0	HF	1.0	1.0	Degrees C			11/16/16 15:59	1
Chloride	490		30	2.5	mg/L			12/03/16 00:03	10
Fluoride	2.5		0.50	0.060	mg/L			12/02/16 16:45	1
Sulfate	920		50	2.3	mg/L			12/03/16 00:03	10
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L			11/11/16 10:13	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			11/10/16 16:34	1

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			11/16/16 16:04	1
Temperature	23.2	HF	1.0	1.0	Degrees C			11/16/16 16:04	1
Chloride	200		15	1.3	mg/L			12/03/16 00:21	5
Fluoride	1.2		0.50	0.060	mg/L			12/02/16 17:02	1
Sulfate	240		25	1.2	mg/L			12/03/16 00:21	5
Total Dissolved Solids (TDS)	1100		10	4.7	mg/L			11/11/16 10:13	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			11/10/16 16:34	1

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.1	HF	0.1	0.1	SU			11/21/16 10:54	1
Temperature	21.3	HF	1.0	1.0	Degrees C			11/21/16 10:54	1
Chloride	ND		3.0	0.25	mg/L			12/02/16 15:15	1
Fluoride	ND		0.50	0.060	mg/L			12/02/16 15:15	1
Sulfate	ND		5.0	0.23	mg/L			12/02/16 15:15	1
Total Dissolved Solids (TDS)	27		10	4.7	mg/L			11/14/16 10:35	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/10/16 16:34	1

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			11/16/16 16:15	1
Temperature	23.3	HF	1.0	1.0	Degrees C			11/16/16 16:15	1
Chloride	200		15	1.3	mg/L			12/03/16 00:39	5
Fluoride	1.2		0.50	0.060	mg/L			12/02/16 17:20	1
Sulfate	240		25	1.2	mg/L			12/03/16 00:39	5
Total Dissolved Solids (TDS)	1100		10	4.7	mg/L			11/11/16 10:13	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/10/16 16:34	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.504		0.298	0.301	1.00	0.378	pCi/L	11/11/16 13:24	12/13/16 20:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:04*	*1*

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.444		0.296	0.299	1.00	0.405	pCi/L	11/11/16 13:24	12/13/16 20:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.6*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:04*	*1*

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.492		0.314	0.317	1.00	0.422	pCi/L	11/11/16 13:24	12/13/16 20:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*77.2*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:04*	*1*

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.758		0.354	0.361	1.00	0.405	pCi/L	11/11/16 13:24	12/13/16 20:05	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.5*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:05*	*1*

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.215	U	0.277	0.277	1.00	0.461	pCi/L	11/11/16 13:24	12/13/16 20:05	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:05*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.387		0.260	0.263	1.00	0.345	pCi/L	11/11/16 13:24	12/13/16 20:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.1*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:06*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.659		0.307	0.313	1.00	0.448	pCi/L	11/11/16 14:15	12/13/16 13:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:49*	*1*
Y Carrier	*87.9*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:49*	*1*

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.820		0.290	0.300	1.00	0.378	pCi/L	11/11/16 14:15	12/13/16 13:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.6*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:49*	*1*
Y Carrier	*89.0*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:49*	*1*

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.15		0.348	0.364	1.00	0.444	pCi/L	11/11/16 14:15	12/13/16 13:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*77.2*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:49*	*1*
Y Carrier	*86.7*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:49*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.988		0.358	0.369	1.00	0.497	pCi/L	11/11/16 14:15	12/13/16 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.5*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:50*	*1*
Y Carrier	*87.9*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:50*	*1*

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.812		0.293	0.302	1.00	0.398	pCi/L	11/11/16 14:15	12/13/16 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:50*	*1*
Y Carrier	*91.2*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:50*	*1*

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.200	U	0.257	0.258	1.00	0.428	pCi/L	11/11/16 14:15	12/13/16 13:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.1*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:50*	*1*
Y Carrier	*88.6*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:50*	*1*

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

Client Sample ID: MW-8
Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.16		0.428	0.434	5.00	0.448	pCi/L		12/15/16 15:01	1

Client Sample ID: MW-9
Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.26		0.415	0.423	5.00	0.405	pCi/L		12/15/16 15:01	1

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

Client Sample ID: MW-10
Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.64		0.469	0.483	5.00	0.444	pCi/L		12/15/16 15:01	1

Client Sample ID: MW-13D
Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.75		0.504	0.516	5.00	0.497	pCi/L		12/15/16 15:01	1

Client Sample ID: MW-9EB
Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.03		0.403	0.410	5.00	0.461	pCi/L		12/15/16 15:01	1

Client Sample ID: MW-13
Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6
Matrix: Ground Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.587		0.366	0.368	5.00	0.428	pCi/L		12/15/16 15:01	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-255364/1-A
Matrix: Water
Analysis Batch: 255599

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		200	8.1	ug/L		11/11/16 14:00	11/14/16 18:27	1

Lab Sample ID: LCS 240-255364/2-A
Matrix: Water
Analysis Batch: 255599

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1020		ug/L		102	80 - 120

Lab Sample ID: 280-90696-1 MS
Matrix: Ground Water
Analysis Batch: 255599

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	4100		1000	5800	4	ug/L		166	75 - 125

Lab Sample ID: 280-90696-1 MSD
Matrix: Ground Water
Analysis Batch: 255599

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	4100		1000	5740	4	ug/L		161	75 - 125	1	20

Lab Sample ID: MB 240-255444/1-A
Matrix: Water
Analysis Batch: 255599

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255444

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		200	8.1	ug/L		11/12/16 15:00	11/14/16 17:19	1

Lab Sample ID: LCS 240-255444/2-A
Matrix: Water
Analysis Batch: 255599

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255444

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1080		ug/L		108	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-255364/1-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/11/16 14:00	12/09/16 11:52	1
Arsenic	ND		0.0050	0.00035	mg/L		11/11/16 14:00	12/09/16 11:52	1
Barium	ND		0.0050	0.00052	mg/L		11/11/16 14:00	12/09/16 11:52	1
Beryllium	ND		0.0010	0.00040	mg/L		11/11/16 14:00	12/09/16 11:52	1
Cadmium	ND		0.0010	0.00031	mg/L		11/11/16 14:00	12/09/16 11:52	1

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

Lab Sample ID: MB 240-255364/1-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	0.173	J	1.0	0.043	mg/L		11/11/16 14:00	12/09/16 11:52	1
Chromium	ND		0.0020	0.00026	mg/L		11/11/16 14:00	12/09/16 11:52	1
Cobalt	ND		0.0010	0.00013	mg/L		11/11/16 14:00	12/09/16 11:52	1
Lead	0.00881		0.0010	0.00016	mg/L		11/11/16 14:00	12/09/16 11:52	1
Lithium	0.00487	J	0.0080	0.00016	mg/L		11/11/16 14:00	12/09/16 11:52	1
Molybdenum	ND		0.010	0.00051	mg/L		11/11/16 14:00	12/09/16 11:52	1
Selenium	ND		0.0050	0.00048	mg/L		11/11/16 14:00	12/09/16 11:52	1
Thallium	ND		0.0010	0.00028	mg/L		11/11/16 14:00	12/09/16 11:52	1

Lab Sample ID: LCS 240-255364/3-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.115		mg/L		115	80 - 120
Arsenic	1.00	1.03		mg/L		103	80 - 120
Barium	1.00	1.14		mg/L		114	80 - 120
Beryllium	1.00	1.10		mg/L		110	80 - 120
Cadmium	1.00	1.14		mg/L		114	80 - 120
Calcium	10.0	11.4		mg/L		114	80 - 120
Chromium	1.00	1.14		mg/L		114	80 - 120
Cobalt	1.00	1.17		mg/L		117	80 - 120
Lead	1.00	1.20		mg/L		120	80 - 120
Lithium	0.100	0.104		mg/L		104	80 - 120
Molybdenum	0.100	0.111		mg/L		111	80 - 120
Selenium	1.00	1.10		mg/L		110	80 - 120
Thallium	0.250	0.284		mg/L		114	80 - 120

Lab Sample ID: 280-90696-1 MS
Matrix: Ground Water
Analysis Batch: 258041

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 255364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.00030	J	0.100	0.100		mg/L		100	75 - 125
Arsenic	0.0030	J	1.00	0.929		mg/L		93	75 - 125
Barium	0.050		1.00	1.06		mg/L		101	75 - 125
Beryllium	ND		1.00	0.988		mg/L		99	75 - 125
Cadmium	0.00090	J	1.00	0.889		mg/L		89	75 - 125
Calcium	160	B	10.0	445	4 B	mg/L		2833	75 - 125
Chromium	0.0020		1.00	0.968		mg/L		97	75 - 125
Cobalt	0.0040		1.00	0.960		mg/L		96	75 - 125
Molybdenum	0.0085	J F1	0.100	0.135	F1	mg/L		126	75 - 125
Selenium	0.019		1.00	0.948		mg/L		93	75 - 125
Thallium	ND		0.250	0.246		mg/L		98	75 - 125

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

Lab Sample ID: 280-90696-1 MSD
Matrix: Ground Water
Analysis Batch: 258041

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 255364

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	0.0936		mg/L		93	75 - 125	7	20
Arsenic	0.0030	J	1.00	0.890		mg/L		89	75 - 125	4	20
Barium	0.050		1.00	1.04		mg/L		99	75 - 125	1	20
Beryllium	ND		1.00	0.984		mg/L		98	75 - 125	0	20
Cadmium	0.00090	J	1.00	0.873		mg/L		87	75 - 125	2	20
Calcium	160	B	10.0	442	4 B	mg/L		2804	75 - 125	1	20
Chromium	0.0020		1.00	0.953		mg/L		95	75 - 125	2	20
Cobalt	0.0040		1.00	0.952		mg/L		95	75 - 125	1	20
Molybdenum	0.0085	J F1	0.100	0.125		mg/L		117	75 - 125	7	20
Selenium	0.019		1.00	0.928		mg/L		91	75 - 125	2	20
Thallium	ND		0.250	0.241		mg/L		96	75 - 125	2	20

Lab Sample ID: MB 240-255444/1-A
Matrix: Water
Analysis Batch: 256468

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255444

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		11/12/16 15:00	11/19/16 20:38	1
Arsenic	ND		0.0050	0.00035	mg/L		11/12/16 15:00	11/19/16 20:38	1
Barium	0.00106	J	0.0050	0.00052	mg/L		11/12/16 15:00	11/19/16 20:38	1
Beryllium	ND		0.0010	0.00040	mg/L		11/12/16 15:00	11/19/16 20:38	1
Cadmium	ND		0.0010	0.00031	mg/L		11/12/16 15:00	11/19/16 20:38	1
Calcium	0.214	J	1.0	0.043	mg/L		11/12/16 15:00	11/19/16 20:38	1
Chromium	ND		0.0020	0.00026	mg/L		11/12/16 15:00	11/19/16 20:38	1
Cobalt	ND		0.0010	0.00013	mg/L		11/12/16 15:00	11/19/16 20:38	1
Lead	0.000200	J	0.0010	0.00016	mg/L		11/12/16 15:00	11/19/16 20:38	1
Lithium	ND		0.0080	0.00016	mg/L		11/12/16 15:00	11/19/16 20:38	1
Molybdenum	ND		0.010	0.00051	mg/L		11/12/16 15:00	11/19/16 20:38	1
Selenium	ND		0.0050	0.00048	mg/L		11/12/16 15:00	11/19/16 20:38	1
Thallium	ND		0.0010	0.00028	mg/L		11/12/16 15:00	11/19/16 20:38	1

Lab Sample ID: LCS 240-255444/3-A
Matrix: Water
Analysis Batch: 256468

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255444

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0973		mg/L		97	80 - 120
Arsenic	1.00	1.04		mg/L		104	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Beryllium	1.00	1.10		mg/L		110	80 - 120
Cadmium	1.00	1.09		mg/L		109	80 - 120
Calcium	10.0	9.93		mg/L		99	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Cobalt	1.00	1.09		mg/L		109	80 - 120
Lead	1.00	1.05		mg/L		105	80 - 120
Lithium	0.100	0.0968		mg/L		97	80 - 120
Molybdenum	0.100	0.0978		mg/L		98	80 - 120
Selenium	1.00	0.920		mg/L		92	80 - 120

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

Lab Sample ID: LCS 240-255444/3-A
Matrix: Water
Analysis Batch: 256468

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255444

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Thallium	0.250	0.256		mg/L		102	80 - 120

Lab Sample ID: MB 240-258623/1-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 258623

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.000493	J	0.0010	0.00016	mg/L		12/08/16 14:00	12/09/16 11:06	1
Lithium	ND		0.0080	0.00016	mg/L		12/08/16 14:00	12/09/16 11:06	1

Lab Sample ID: LCS 240-258623/2-A
Matrix: Water
Analysis Batch: 258864

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 258623

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	1.09		mg/L		109	80 - 120
Lithium	0.100	0.0846		mg/L		85	80 - 120

Lab Sample ID: 280-90696-1 MS
Matrix: Ground Water
Analysis Batch: 258864

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 258623

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.0022	B	1.00	0.983		mg/L		98	75 - 125
Lithium	0.11		0.100	0.197		mg/L		91	75 - 125

Lab Sample ID: 280-90696-1 MSD
Matrix: Ground Water
Analysis Batch: 258864

Client Sample ID: MW-8
Prep Type: Total Recoverable
Prep Batch: 258623

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	0.0022	B	1.00	1.03		mg/L		102	75 - 125	4	20
Lithium	0.11		0.100	0.209		mg/L		102	75 - 125	6	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-352593/1-A
Matrix: Water
Analysis Batch: 352806

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 352593

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.027	ug/L		11/22/16 11:20	11/22/16 17:28	1

Lab Sample ID: LCS 280-352593/2-A
Matrix: Water
Analysis Batch: 352806

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 352593

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.10		ug/L		102	84 - 120

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 280-90696-1 MS
Matrix: Ground Water
Analysis Batch: 352806

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 352593

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		5.00	4.98		ug/L		100	75 - 125

Lab Sample ID: 280-90696-1 MSD
Matrix: Ground Water
Analysis Batch: 352806

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 352593

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		5.00	5.04		ug/L		101	75 - 125	1	20

Method: 9040B - pH

Lab Sample ID: LCS 280-351913/29
Matrix: Water
Analysis Batch: 351913

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 280-352485/4
Matrix: Water
Analysis Batch: 352485

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C			7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-353988/6
Matrix: Water
Analysis Batch: 353988

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			12/02/16 10:52	1
Fluoride	ND		0.50	0.060	mg/L			12/02/16 10:52	1
Sulfate	ND		5.0	0.23	mg/L			12/02/16 10:52	1

Lab Sample ID: LCS 280-353988/4
Matrix: Water
Analysis Batch: 353988

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride			100	101		mg/L		101	90 - 110
Fluoride			5.00	5.08		mg/L		102	90 - 110
Sulfate			100	101		mg/L		101	90 - 110

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

Lab Sample ID: LCSD 280-353988/5
Matrix: Water
Analysis Batch: 353988

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	5.10		mg/L		102	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-353988/3
Matrix: Water
Analysis Batch: 353988

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.57	J	mg/L		103	50 - 150
Fluoride	0.200	0.169	J	mg/L		85	50 - 150
Sulfate	2.50	2.56	J	mg/L		103	50 - 150

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

Lab Sample ID: MB 280-351020/1
Matrix: Water
Analysis Batch: 351020

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

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

Lab Sample ID: LCS 280-351020/2
Matrix: Water
Analysis Batch: 351020

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	488		mg/L		98	86 - 110

Lab Sample ID: MB 280-351303/1
Matrix: Water
Analysis Batch: 351303

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/14/16 10:35	1

Lab Sample ID: LCS 280-351303/2
Matrix: Water
Analysis Batch: 351303

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	497		mg/L		99	86 - 110

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

Lab Sample ID: MB 280-350887/2
Matrix: Water
Analysis Batch: 350887

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			11/10/16 16:34	1

Lab Sample ID: LCS 280-350887/1
Matrix: Water
Analysis Batch: 350887

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.0		mg/L		92	86 - 114

Lab Sample ID: 280-90696-1 DU
Matrix: Ground Water
Analysis Batch: 350887

Client Sample ID: MW-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	29		28.4		mg/L		1	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-278905/1-A
Matrix: Water
Analysis Batch: 283776

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 278905

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.07214	U	0.200	0.200	1.00	0.376	pCi/L	11/11/16 13:24	12/13/16 20:09	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.0*		*40 - 110*	*11/11/16 13:24*	*12/13/16 20:09*	*1*

Lab Sample ID: LCS 160-278905/2-A
Matrix: Water
Analysis Batch: 283776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278905

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.1	14.57		1.83	1.00	0.420	pCi/L	131	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*86.0*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-278918/1-A
Matrix: Water
Analysis Batch: 283776

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 278918

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3536	U	0.253	0.256	1.00	0.395	pCi/L	11/11/16 14:15	12/13/16 13:54	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.0*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:54*	*1*
Y Carrier	*87.5*		*40 - 110*	*11/11/16 14:15*	*12/13/16 13:54*	*1*

Lab Sample ID: LCS 160-278918/2-A
Matrix: Water
Analysis Batch: 283775

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278918

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			14.1	16.55		1.76	1.00	0.416	pCi/L	117	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*86.0*		*40 - 110*
Y Carrier	*90.5*		*40 - 110*

Metals

Prep Batch: 255364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total Recoverable	Ground Water	3005A	
280-90696-2	MW-9	Total Recoverable	Ground Water	3005A	
280-90696-4	MW-13D	Total Recoverable	Ground Water	3005A	
280-90696-5	MW-9EB	Total Recoverable	Water	3005A	
280-90696-6	MW-13	Total Recoverable	Ground Water	3005A	
MB 240-255364/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-255364/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-255364/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-90696-1 MS	MW-8	Total Recoverable	Ground Water	3005A	
280-90696-1 MS	MW-8	Total Recoverable	Ground Water	3005A	
280-90696-1 MSD	MW-8	Total Recoverable	Ground Water	3005A	
280-90696-1 MSD	MW-8	Total Recoverable	Ground Water	3005A	

Prep Batch: 255444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-3	MW-10	Total Recoverable	Ground Water	3005A	
MB 240-255444/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-255444/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-255444/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 255599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total Recoverable	Ground Water	6010C	255364
280-90696-2	MW-9	Total Recoverable	Ground Water	6010C	255364
280-90696-3	MW-10	Total Recoverable	Ground Water	6010C	255444
280-90696-4	MW-13D	Total Recoverable	Ground Water	6010C	255364
280-90696-5	MW-9EB	Total Recoverable	Water	6010C	255364
280-90696-6	MW-13	Total Recoverable	Ground Water	6010C	255364
MB 240-255364/1-A	Method Blank	Total Recoverable	Water	6010C	255364
MB 240-255444/1-A	Method Blank	Total Recoverable	Water	6010C	255444
LCS 240-255364/2-A	Lab Control Sample	Total Recoverable	Water	6010C	255364
LCS 240-255444/2-A	Lab Control Sample	Total Recoverable	Water	6010C	255444
280-90696-1 MS	MW-8	Total Recoverable	Ground Water	6010C	255364
280-90696-1 MSD	MW-8	Total Recoverable	Ground Water	6010C	255364

Analysis Batch: 256468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-3	MW-10	Total Recoverable	Ground Water	6020A	255444
MB 240-255444/1-A	Method Blank	Total Recoverable	Water	6020A	255444
LCS 240-255444/3-A	Lab Control Sample	Total Recoverable	Water	6020A	255444

Analysis Batch: 258041

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total Recoverable	Ground Water	6020A	255364
280-90696-2	MW-9	Total Recoverable	Ground Water	6020A	255364
280-90696-4	MW-13D	Total Recoverable	Ground Water	6020A	255364
280-90696-5	MW-9EB	Total Recoverable	Water	6020A	255364
280-90696-6	MW-13	Total Recoverable	Ground Water	6020A	255364
280-90696-1 MS	MW-8	Total Recoverable	Ground Water	6020A	255364
280-90696-1 MSD	MW-8	Total Recoverable	Ground Water	6020A	255364

Metals (Continued)

Prep Batch: 258623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total Recoverable	Ground Water	3005A	
280-90696-4	MW-13D	Total Recoverable	Ground Water	3005A	
MB 240-258623/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-258623/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-90696-1 MS	MW-8	Total Recoverable	Ground Water	3005A	
280-90696-1 MSD	MW-8	Total Recoverable	Ground Water	3005A	

Analysis Batch: 258864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total Recoverable	Ground Water	6020A	258623
280-90696-4	MW-13D	Total Recoverable	Ground Water	6020A	258623
280-90696-6	MW-13	Total Recoverable	Ground Water	6020A	255364
MB 240-255364/1-A	Method Blank	Total Recoverable	Water	6020A	255364
MB 240-258623/1-A	Method Blank	Total Recoverable	Water	6020A	258623
LCS 240-255364/3-A	Lab Control Sample	Total Recoverable	Water	6020A	255364
LCS 240-258623/2-A	Lab Control Sample	Total Recoverable	Water	6020A	258623
280-90696-1 MS	MW-8	Total Recoverable	Ground Water	6020A	258623
280-90696-1 MSD	MW-8	Total Recoverable	Ground Water	6020A	258623

Analysis Batch: 259217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-2	MW-9	Total Recoverable	Ground Water	6020A	255364
280-90696-5	MW-9EB	Total Recoverable	Water	6020A	255364

Prep Batch: 352593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	7470A	
280-90696-2	MW-9	Total/NA	Ground Water	7470A	
280-90696-3	MW-10	Total/NA	Ground Water	7470A	
280-90696-4	MW-13D	Total/NA	Ground Water	7470A	
280-90696-5	MW-9EB	Total/NA	Water	7470A	
280-90696-6	MW-13	Total/NA	Ground Water	7470A	
MB 280-352593/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-352593/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-90696-1 MS	MW-8	Total/NA	Ground Water	7470A	
280-90696-1 MSD	MW-8	Total/NA	Ground Water	7470A	

Analysis Batch: 352806

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	7470A	352593
280-90696-2	MW-9	Total/NA	Ground Water	7470A	352593
280-90696-3	MW-10	Total/NA	Ground Water	7470A	352593
280-90696-4	MW-13D	Total/NA	Ground Water	7470A	352593
280-90696-5	MW-9EB	Total/NA	Water	7470A	352593
280-90696-6	MW-13	Total/NA	Ground Water	7470A	352593
MB 280-352593/1-A	Method Blank	Total/NA	Water	7470A	352593
LCS 280-352593/2-A	Lab Control Sample	Total/NA	Water	7470A	352593
280-90696-1 MS	MW-8	Total/NA	Ground Water	7470A	352593
280-90696-1 MSD	MW-8	Total/NA	Ground Water	7470A	352593

General Chemistry

Analysis Batch: 350887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	SM 2540D	
280-90696-2	MW-9	Total/NA	Ground Water	SM 2540D	
280-90696-3	MW-10	Total/NA	Ground Water	SM 2540D	
280-90696-4	MW-13D	Total/NA	Ground Water	SM 2540D	
280-90696-5	MW-9EB	Total/NA	Water	SM 2540D	
280-90696-6	MW-13	Total/NA	Ground Water	SM 2540D	
MB 280-350887/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-350887/1	Lab Control Sample	Total/NA	Water	SM 2540D	
280-90696-1 DU	MW-8	Total/NA	Ground Water	SM 2540D	

Analysis Batch: 351020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-2	MW-9	Total/NA	Ground Water	SM 2540C	
280-90696-3	MW-10	Total/NA	Ground Water	SM 2540C	
280-90696-4	MW-13D	Total/NA	Ground Water	SM 2540C	
280-90696-6	MW-13	Total/NA	Ground Water	SM 2540C	
MB 280-351020/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-351020/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 351303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	SM 2540C	
280-90696-5	MW-9EB	Total/NA	Water	SM 2540C	
MB 280-351303/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-351303/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 351913

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	9040B	
280-90696-2	MW-9	Total/NA	Ground Water	9040B	
280-90696-3	MW-10	Total/NA	Ground Water	9040B	
280-90696-4	MW-13D	Total/NA	Ground Water	9040B	
280-90696-6	MW-13	Total/NA	Ground Water	9040B	
LCS 280-351913/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 352485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-5	MW-9EB	Total/NA	Water	9040B	
LCS 280-352485/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 353988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	9056A	
280-90696-1	MW-8	Total/NA	Ground Water	9056A	
280-90696-2	MW-9	Total/NA	Ground Water	9056A	
280-90696-2	MW-9	Total/NA	Ground Water	9056A	
280-90696-3	MW-10	Total/NA	Ground Water	9056A	
280-90696-3	MW-10	Total/NA	Ground Water	9056A	
280-90696-4	MW-13D	Total/NA	Ground Water	9056A	
280-90696-4	MW-13D	Total/NA	Ground Water	9056A	
280-90696-5	MW-9EB	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 353988 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-6	MW-13	Total/NA	Ground Water	9056A	
280-90696-6	MW-13	Total/NA	Ground Water	9056A	
MB 280-353988/6	Method Blank	Total/NA	Water	9056A	
LCS 280-353988/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-353988/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-353988/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 278905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	PrecSep-21	
280-90696-2	MW-9	Total/NA	Ground Water	PrecSep-21	
280-90696-3	MW-10	Total/NA	Ground Water	PrecSep-21	
280-90696-4	MW-13D	Total/NA	Ground Water	PrecSep-21	
280-90696-5	MW-9EB	Total/NA	Water	PrecSep-21	
280-90696-6	MW-13	Total/NA	Ground Water	PrecSep-21	
MB 160-278905/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-278905/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 278918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-90696-1	MW-8	Total/NA	Ground Water	PrecSep_0	
280-90696-2	MW-9	Total/NA	Ground Water	PrecSep_0	
280-90696-3	MW-10	Total/NA	Ground Water	PrecSep_0	
280-90696-4	MW-13D	Total/NA	Ground Water	PrecSep_0	
280-90696-5	MW-9EB	Total/NA	Water	PrecSep_0	
280-90696-6	MW-13	Total/NA	Ground Water	PrecSep_0	
MB 160-278918/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-278918/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-90696-1

Client Sample ID: MW-8

Date Collected: 11/08/16 12:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-1
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	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			255599	11/14/16 18:35	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258041	12/02/16 18:30	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	258623	12/08/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258864	12/09/16 10:58	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	352593	11/22/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1			352806	11/22/16 18:02	CDH	TAL DEN
Total/NA	Analysis	9040B		1			351913	11/16/16 15:51	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	353988	12/02/16 16:09	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	353988	12/02/16 23:28	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	351303	11/14/16 10:35	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	350887	11/10/16 16:34	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.70 mL	1.0 g	278905	11/11/16 13:24	AS	TAL SL
Total/NA	Analysis	9315		1			283771	12/13/16 20:04	MLK	TAL SL
Total/NA	Prep	PrecSep_0			999.70 mL	1.0 g	278918	11/11/16 14:15	AS	TAL SL
Total/NA	Analysis	9320		1			283775	12/13/16 13:49	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			284139	12/15/16 15:01	RTM	TAL SL

Client Sample ID: MW-9

Date Collected: 11/07/16 16:40
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-2
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	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			255599	11/14/16 19:13	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258041	12/02/16 18:58	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		5			259217	12/12/16 15:05	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	352593	11/22/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1			352806	11/22/16 18:09	CDH	TAL DEN
Total/NA	Analysis	9040B		1			351913	11/16/16 15:56	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	353988	12/02/16 16:27	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	353988	12/02/16 23:46	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	351020	11/11/16 10:13	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	350887	11/10/16 16:34	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.76 mL	1.0 g	278905	11/11/16 13:24	AS	TAL SL
Total/NA	Analysis	9315		1			283771	12/13/16 20:04	MLK	TAL SL
Total/NA	Prep	PrecSep_0			999.76 mL	1.0 g	278918	11/11/16 14:15	AS	TAL SL
Total/NA	Analysis	9320		1			283775	12/13/16 13:49	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			284139	12/15/16 15:01	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-90696-1

Client Sample ID: MW-10

Date Collected: 11/07/16 15:15
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-3

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	255444	11/12/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			255599	11/14/16 18:22	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255444	11/12/16 15:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			256468	11/19/16 21:28	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	352593	11/22/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1			352806	11/22/16 18:11	CDH	TAL DEN
Total/NA	Analysis	9040B		1			351913	11/16/16 15:59	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	353988	12/02/16 16:45	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	353988	12/03/16 00:03	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	351020	11/11/16 10:13	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	350887	11/10/16 16:34	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.69 mL	1.0 g	278905	11/11/16 13:24	AS	TAL SL
Total/NA	Analysis	9315		1			283771	12/13/16 20:04	MLK	TAL SL
Total/NA	Prep	PrecSep_0			999.69 mL	1.0 g	278918	11/11/16 14:15	AS	TAL SL
Total/NA	Analysis	9320		1			283775	12/13/16 13:49	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			284139	12/15/16 15:01	RTM	TAL SL

Client Sample ID: MW-13D

Date Collected: 11/07/16 12:00
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-4

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	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			255599	11/14/16 19:18	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258041	12/02/16 19:11	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	258623	12/08/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258864	12/09/16 11:35	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	352593	11/22/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1			352806	11/22/16 18:13	CDH	TAL DEN
Total/NA	Analysis	9040B		1			351913	11/16/16 16:04	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	353988	12/02/16 17:02	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	353988	12/03/16 00:21	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	351020	11/11/16 10:13	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	350887	11/10/16 16:34	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.62 mL	1.0 g	278905	11/11/16 13:24	AS	TAL SL
Total/NA	Analysis	9315		1			283771	12/13/16 20:05	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.62 mL	1.0 g	278918	11/11/16 14:15	AS	TAL SL
Total/NA	Analysis	9320		1			283775	12/13/16 13:50	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			284139	12/15/16 15:01	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-90696-1

Client Sample ID: MW-9EB

Date Collected: 11/08/16 10:30
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-5

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	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			255599	11/14/16 19:22	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258041	12/02/16 19:15	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		5			259217	12/12/16 15:09	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	352593	11/22/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1			352806	11/22/16 18:20	CDH	TAL DEN
Total/NA	Analysis	9040B		1			352485	11/21/16 10:54	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	353988	12/02/16 15:15	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	351303	11/14/16 10:35	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	350887	11/10/16 16:34	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.16 mL	1.0 g	278905	11/11/16 13:24	AS	TAL SL
Total/NA	Analysis	9315		1			283771	12/13/16 20:05	MLK	TAL SL
Total/NA	Prep	PrecSep_0			999.16 mL	1.0 g	278918	11/11/16 14:15	AS	TAL SL
Total/NA	Analysis	9320		1			283775	12/13/16 13:50	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			284139	12/15/16 15:01	RTM	TAL SL

Client Sample ID: MW-13

Date Collected: 11/07/16 11:45
Date Received: 11/08/16 17:15

Lab Sample ID: 280-90696-6

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	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			255599	11/14/16 19:26	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258041	12/02/16 19:19	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	255364	11/11/16 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			258864	12/09/16 12:17	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	352593	11/22/16 11:20	CDH	TAL DEN
Total/NA	Analysis	7470A		1			352806	11/22/16 18:22	CDH	TAL DEN
Total/NA	Analysis	9040B		1			351913	11/16/16 16:15	MMC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	353988	12/02/16 17:20	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	353988	12/03/16 00:39	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	351020	11/11/16 10:13	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	350887	11/10/16 16:34	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.48 mL	1.0 g	278905	11/11/16 13:24	AS	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	283775	12/13/16 20:06	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.48 mL	1.0 g	278918	11/11/16 14:15	AS	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	283775	12/13/16 13:50	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			284139	12/15/16 15:01	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-90696-1

Laboratory References:

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

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

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

Certification Summary

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

TestAmerica Job ID: 280-90696-1

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
Oregon	NELAP	10	4025	01-09-17

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Ground Water	Temperature
9040B		Water	Temperature

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
Louisiana (DW)	NELAP	6	LA160008	12-31-16 *
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-90696-1

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
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: Nick Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: (303) 351-2139	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: 720-633-2380(Tel)	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371	
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-7~~ NH				~~Water~~	N	N	~~1~~	~~2~~	~~2~~	~~1~~	~~2~~	8	Did not sample
MW-8	11/08/16	1215	G	Water	N	N	1	2	2	1	2	8	
MW-9	11/07/16	1640	G	Water	N	N	1	2	2	1	2	8	
MW-10	11/07/16	1515	G	Water	N	N	1	2	2	1	2	8	
Field Duplicate	11/07/16	1200	G	Water	N	N	1	2	2	1	2	8	
Equipment Blank	11/08/16	1030	G	Water	N	N	1	2	2	1	2	8	
MW-13	11/07/16	1145	G	Water	N	N	1	2	2	1	2	8	

280-90696 Chain of Custody

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

(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:

	Date/Time	Company		Date/Time	Company
Relinquished by: Nick Hanrahan	11/8/16 1715	HDR	Received by:	11/8/16 1715	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: 1.1, 6.9, 0.3 IR#50.0 Transfer RP 11-8-16

12/15/2016

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Nick Hanrahan	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No:
Client Contact: Anna Lundin	Phone: (303) 351-2139	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: 720-633-2380(Tel)	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371	
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-7~~ NH				~~Water~~	N	N	~~1~~	~~2~~	~~2~~	~~1~~	~~2~~	8	Did not sample
MW-8	11/08/16	1215	G	Water	N	N	1	2	2	1	2	8	
MW-9	11/07/16	1640	G	Water	N	N	1	2	2	1	2	8	
MW-10	11/07/16	1515	G	Water	N	N	1	2	2	1	2	8	
Field Duplicate	11/07/16	1200	G	Water	N	N	1	2	2	1	2	8	
Equipment Blank	11/08/16	1030	G	Water	N	N	1	2	2	1	2	8	
MW-13	11/07/16	1145	G	Water	N	N	1	2	2	1	2	8	

280-90696 Chain of Custody

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

(... 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:

	Date/Time	Company		Date/Time	Company
Relinquished by: Nick Hanrahan	11/8/16 1715	HDR	Received by:	11/8/16 1715	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: 1.1, 6.9, 0.3 IR#50.0 Transfer RP 11-8-16

Page 41 of 47

12/15/2016

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

Chain of Custody Record


280-90696 Chain of Custody

TestAmerica
LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K	lo: 76814.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: stephanie.rothmeyer@testamericainc.com	Colorado	Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Oregon	Job #: 280-90696-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 12/8/2016		
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 - Cherokee	Project #: 28014371		
Site: Xcel Energy CCR - Cherokee Station	SSOW#:		

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-8 (280-90696-1)	11/8/16	12:15 Mountain		Water			X	X	X	2	
MW-9 (280-90696-2)	11/7/16	16:40 Mountain		Water			X	X	X	2	
MW-10 (280-90696-3)	11/7/16	15:15 Mountain		Water			X	X	X	2	
FIELD DUPLICATE (280-90696-4)	11/7/16	12:00 Mountain		Water			X	X	X	2	
EQUIPMENT BLANK (280-90696-5)	11/8/16	10:30 Mountain		Water			X	X	X	2	
MW-13 (280-90696-6)	11/7/16	11:45 Mountain		Water			X	X	X	2	

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

Possible Hazard Identification *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: 11-9-16 1625	Company TAT	Received by:	Date/Time: 11/10/16 0925	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:

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

1.4|C1.8

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: 280-376813.1
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): NELAP - Oregon		Job #: 280-90696-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 12/5/2016			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee Station	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A/3005A 14 Metals (Includes B and Ca) - 1/2-SUB	Total Number of containers	SGT Special Instructions/Note:
			Preservation Code:						
MW-8 (280-90696-1)	11/8/16	12:15 Mountain		Water			X	1	Use Collision Cell
MW-9 (280-90696-2)	11/7/16	16:40 Mountain		Water			X	1	Use Collision Cell
MW-10 (280-90696-3)	11/7/16	15:15 Mountain		Water			X	1	Use Collision Cell
FIELD DUPLICATE (280-90696-4)	11/7/16	12:00 Mountain		Water			X	1	Use Collision Cell
EQUIPMENT BLANK (280-90696-5)	11/8/16	10:30 Mountain		Water			X	1	Use Collision Cell
MW-13 (280-90696-6)	11/7/16	11:45 Mountain		Water			X	1	Use Collision Cell

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

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

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Se	11-9-16 1530	TAD		11/10/16 915	TAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

12/15/2016

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

Canton Facility

Client TA Denver Site Name _____ Cooler unpacked by: DSO

Cooler Received on 11/10/16 Opened on 11/10/16

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 +0.4 °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.8 °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: 280-90696-1

Login Number: 90696
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.	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: 280-90696-1

Login Number: 90696
List Number: 3
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 11/10/16 04:11 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18
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 - Cherokee

TestAmerica Job ID: 280-90696-1

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)
280-90696-1	MW-8	84.0
280-90696-2	MW-9	82.6
280-90696-3	MW-10	77.2
280-90696-4	MW-13D	79.5
280-90696-6	MW-13	80.1

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)
280-90696-5	MW-9EB	84.0
LCS 160-278905/2-A	Lab Control Sample	86.0
MB 160-278905/1-A	Method Blank	88.0

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)
280-90696-1	MW-8	84.0	87.9
280-90696-2	MW-9	82.6	89.0
280-90696-3	MW-10	77.2	86.7
280-90696-4	MW-13D	79.5	87.9
280-90696-6	MW-13	80.1	88.6

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)
280-90696-5	MW-9EB	84.0	91.2
LCS 160-278918/2-A	Lab Control Sample	86.0	90.5
MB 160-278918/1-A	Method Blank	88.0	87.5

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: 280-94335-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
3/28/2017 4:55:09 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 - Cherokee

TestAmerica Job ID: 280-94335-1

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

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 280-94335-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-94335-1

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 3/1/2017 at 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.3º C and 5.9º C.

The Chain-of-Custody (COC) was improperly completed. The Empty Kit Relinquished by: field on the COC was filled out at the time of sample receipt instead of the Relinquished By: field.

TOTAL RECOVERABLE METALS

Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 03/06/2017 and analyzed on 03/07/2017.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 03/06/2017 and analyzed on 03/07/2017.

Barium and Calcium were detected in method blank MB 240-269333/1-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-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 03/21/2017.

Job ID: 280-94335-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

TOTAL DISSOLVED SOLIDS
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 03/02/2017.

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

TOTAL SUSPENDED SOLIDS
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/06/2017.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample MW-8 (280-94335-1). Sample non-homogeneity is suspected.

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

CORROSIVITY (PH)
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 03/03/2017 and 03/08/2017.

The following sample did not equilibrate: MW-9EB (280-94335-6). A rerun is reported, since the original run did not equilibrate.

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

ANIONS (28 DAYS)
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 03/02/2017 and 03/03/2017.

Samples MW-8 (280-94335-1)[20X], MW-9 (280-94335-2)[20X], MW-10 (280-94335-3)[20X], MW-13 (280-94335-4)[5X] and MW10-D (280-94335-5)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 03/06/2017 and analyzed on 03/28/2017.

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

RADIUM-228
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB (280-94335-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 03/06/2017 and analyzed on 03/20/2017.

Radium-228 was detected in method blank MB 160-296161/1-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-226/RADIUM-228 (GFPC)
Samples MW-8 (280-94335-1), MW-9 (280-94335-2), MW-10 (280-94335-3), MW-13 (280-94335-4), MW10-D (280-94335-5) and MW-9EB

Job ID: 280-94335-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

(280-94335-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 03/28/2017.

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 - Cherokee

TestAmerica Job ID: 280-94335-1

Client Sample ID: MW-8 — Lab Sample ID: 280-94335-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.5		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0016	J	0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0016	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.034	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.0032		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	380	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00090	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0065		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00079	J	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.049		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0091		0.0050	0.00048	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	23.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	570		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	1.1		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1200		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	2800		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	12		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-94335-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.3		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0022		0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0034	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.057	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.0047		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	400	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00098	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0037		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.0037		0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.15		0.0080	0.00016	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-9 (Continued) — Lab Sample ID: 280-94335-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.053		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0049	J	0.0050	0.00048	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	800		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	2.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3300		20	9.4	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-10 — Lab Sample ID: 280-94335-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.1		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0024		0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0030	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.074	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.00093	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	380	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00096	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0036		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00060	J	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.053		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0049	J	0.0050	0.00048	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	23.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	660		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	2.9		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-94335-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.73		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.00062	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.10	B	0.0050	0.00052	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 - Cherokee

TestAmerica Job ID: 280-94335-1

Client Sample ID: MW-13 (Continued) — Lab Sample ID: 280-94335-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	160	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.00025	J	0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00026	J	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.043		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0027	J	0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0045	J	0.0050	0.00048	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	23.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	250		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1100		10	4.7	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: MW10-D — Lab Sample ID: 280-94335-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.1		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0023		0.0020	0.00027	mg/L	1		6020A	Total Recoverable
Arsenic	0.0029	J	0.0050	0.00035	mg/L	1		6020A	Total Recoverable
Barium	0.074	B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Cadmium	0.00086	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Calcium	380	B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.0010	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Cobalt	0.0036		0.0010	0.00013	mg/L	1		6020A	Total Recoverable
Lead	0.00042	J	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.00016	mg/L	1		6020A	Total Recoverable
Molybdenum	0.053		0.010	0.00051	mg/L	1		6020A	Total Recoverable
Selenium	0.0044	J	0.0050	0.00048	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	23.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	660		60	5.1	mg/L	20		9056A	Total/NA
Fluoride	2.9		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3000		20	9.4	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: MW10-D (Continued) — Lab Sample ID: 280-94335-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9EB — Lab Sample ID: 280-94335-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.010	J	0.20	0.0081	mg/L	1		6010C	Total Recoverable
Barium	0.0011	J B	0.0050	0.00052	mg/L	1		6020A	Total Recoverable
Calcium	0.26	J B	1.0	0.043	mg/L	1		6020A	Total Recoverable
Chromium	0.00082	J	0.0020	0.00026	mg/L	1		6020A	Total Recoverable
Lead	0.00027	J	0.0010	0.00016	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	24.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	0.43	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 - Cherokee

TestAmerica Job ID: 280-94335-1

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 - Cherokee

TestAmerica Job ID: 280-94335-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-94335-1	MW-8	Water	02/27/17 14:10	03/01/17 15:50
280-94335-2	MW-9	Water	02/27/17 12:55	03/01/17 15:50
280-94335-3	MW-10	Water	02/27/17 11:20	03/01/17 15:50
280-94335-4	MW-13	Water	03/01/17 09:45	03/01/17 15:50
280-94335-5	MW10-D	Water	02/27/17 11:20	03/01/17 15:50
280-94335-6	MW-9EB	Water	02/27/17 13:20	03/01/17 15:50

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

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.5		0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 15:44	1

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.3		0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 15:57	1

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.1		0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 16:02	1

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.73		0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 16:06	1

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.1		0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 16:11	1

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.010	J	0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 16:15	1

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

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0016	J	0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 22:56	1
Arsenic	0.0016	J	0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 22:56	1
Barium	0.034	B	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 22:56	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 22:56	1
Cadmium	0.0032		0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 22:56	1
Calcium	380	B	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 22:56	1
Chromium	0.00090	J	0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 22:56	1
Cobalt	0.0065		0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 22:56	1
Lead	0.00079	J	0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 22:56	1
Lithium	0.11		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 22:56	1
Molybdenum	0.049		0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 22:56	1
Selenium	0.0091		0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 22:56	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 22:56	1

Client Sample Results

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

TestAmerica Job ID: 280-94335-1

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0022		0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 23:00	1
Arsenic	0.0034	J	0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 23:00	1
Barium	0.057	B	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 23:00	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 23:00	1
Cadmium	0.0047		0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 23:00	1
Calcium	400	B	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 23:00	1
Chromium	0.00098	J	0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 23:00	1
Cobalt	0.0037		0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 23:00	1
Lead	0.0037		0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 23:00	1
Lithium	0.15		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 23:00	1
Molybdenum	0.053		0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 23:00	1
Selenium	0.0049	J	0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 23:00	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 23:00	1

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0024		0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 23:05	1
Arsenic	0.0030	J	0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 23:05	1
Barium	0.074	B	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 23:05	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 23:05	1
Cadmium	0.00093	J	0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 23:05	1
Calcium	380	B	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 23:05	1
Chromium	0.00096	J	0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 23:05	1
Cobalt	0.0036		0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 23:05	1
Lead	0.00060	J	0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 23:05	1
Lithium	0.12		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 23:05	1
Molybdenum	0.053		0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 23:05	1
Selenium	0.0049	J	0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 23:05	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 23:05	1

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 23:09	1
Arsenic	0.00062	J	0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 23:09	1
Barium	0.10	B	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 23:09	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 23:09	1
Cadmium	ND		0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 23:09	1
Calcium	160	B	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 23:09	1
Chromium	0.0017	J	0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 23:09	1
Cobalt	0.00025	J	0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 23:09	1
Lead	0.00026	J	0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 23:09	1
Lithium	0.043		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 23:09	1
Molybdenum	0.0027	J	0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 23:09	1
Selenium	0.0045	J	0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 23:09	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 23:09	1

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

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0023**		0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 23:13	1
Arsenic	**0.0029**	**J**	0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 23:13	1
Barium	**0.074**	**B**	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 23:13	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 23:13	1
Cadmium	**0.00086**	**J**	0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 23:13	1
Calcium	**380**	**B**	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 23:13	1
Chromium	**0.0010**	**J**	0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 23:13	1
Cobalt	**0.0036**		0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 23:13	1
Lead	**0.00042**	**J**	0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 23:13	1
Lithium	**0.11**		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 23:13	1
Molybdenum	**0.053**		0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 23:13	1
Selenium	**0.0044**	**J**	0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 23:13	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 23:13	1

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 23:17	1
Arsenic	ND		0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 23:17	1
Barium	**0.0011**	**J B**	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 23:17	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 23:17	1
Cadmium	ND		0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 23:17	1
Calcium	**0.26**	**J B**	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 23:17	1
Chromium	**0.00082**	**J**	0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 23:17	1
Cobalt	ND		0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 23:17	1
Lead	**0.00027**	**J**	0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 23:17	1
Lithium	ND		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 23:17	1
Molybdenum	ND		0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 23:17	1
Selenium	ND		0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 23:17	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 23:17	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:21	1

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:27	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:29	1

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:32	1

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:34	1

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:36	1

General Chemistry

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			03/03/17 13:35	1
Temperature	23.4	HF	1.0	1.0	Degrees C			03/03/17 13:35	1
Chloride	570		60	5.1	mg/L			03/02/17 23:42	20
Fluoride	1.1		0.50	0.060	mg/L			03/02/17 23:25	1
Sulfate	1200		100	4.6	mg/L			03/02/17 23:42	20
Total Dissolved Solids (TDS)	2800		20	9.4	mg/L			03/02/17 08:31	1
Total Suspended Solids	12		4.0	1.1	mg/L			03/06/17 18:04	1

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.0	HF	0.1	0.1	SU			03/03/17 13:40	1
Temperature	23.4	HF	1.0	1.0	Degrees C			03/03/17 13:40	1
Chloride	800		60	5.1	mg/L			03/03/17 00:15	20
Fluoride	2.3		0.50	0.060	mg/L			03/02/17 23:59	1
Sulfate	1300		100	4.6	mg/L			03/03/17 00:15	20
Total Dissolved Solids (TDS)	3300		20	9.4	mg/L			03/02/17 08:31	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			03/06/17 18:04	1

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

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			03/03/17 13:45	1

General Chemistry (Continued)

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	**23.5**	**HF**	1.0	1.0	Degrees C			03/03/17 13:45	1
Chloride	**660**		60	5.1	mg/L			03/03/17 00:49	20
Fluoride	**2.9**		0.50	0.060	mg/L			03/03/17 00:32	1
Sulfate	**1300**		100	4.6	mg/L			03/03/17 00:49	20
Total Dissolved Solids (TDS)	**3000**		20	9.4	mg/L			03/02/17 08:31	1
Total Suspended Solids	ND		4.0	1.1	mg/L			03/06/17 18:04	1

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**7.9**	**HF**	0.1	0.1	SU			03/03/17 13:50	1
Temperature	**23.8**	**HF**	1.0	1.0	Degrees C			03/03/17 13:50	1
Chloride	**190**		3.0	0.25	mg/L			03/03/17 01:06	1
Fluoride	**1.2**		0.50	0.060	mg/L			03/03/17 01:06	1
Sulfate	**250**		25	1.2	mg/L			03/03/17 01:23	5
Total Dissolved Solids (TDS)	**1100**		10	4.7	mg/L			03/02/17 08:31	1
Total Suspended Solids	**17**		4.0	1.1	mg/L			03/06/17 18:04	1

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

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			03/03/17 13:55	1
Temperature	**23.8**	**HF**	1.0	1.0	Degrees C			03/03/17 13:55	1
Chloride	**660**		60	5.1	mg/L			03/03/17 01:56	20
Fluoride	**2.9**		0.50	0.060	mg/L			03/03/17 01:40	1
Sulfate	**1300**		100	4.6	mg/L			03/03/17 01:56	20
Total Dissolved Solids (TDS)	**3000**		20	9.4	mg/L			03/02/17 08:31	1
Total Suspended Solids	**2.0**	**J**	4.0	1.1	mg/L			03/06/17 18:04	1

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	**6.5**	**HF**	0.1	0.1	SU			03/08/17 13:51	1
Temperature	**24.3**	**HF**	1.0	1.0	Degrees C			03/08/17 13:51	1
Chloride	ND		3.0	0.25	mg/L			03/03/17 02:47	1
Fluoride	ND		0.50	0.060	mg/L			03/03/17 02:47	1
Sulfate	**0.43**	**J**	5.0	0.23	mg/L			03/03/17 02:47	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/02/17 08:31	1
Total Suspended Solids	ND		4.0	1.1	mg/L			03/06/17 18:04	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.180		0.0979	0.0992	1.00	0.119	pCi/L	03/06/17 10:59	03/28/17 08:10	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	90.0		40 - 110	03/06/17 10:59	03/28/17 08:10	1

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.139		0.0889	0.0898	1.00	0.119	pCi/L	03/06/17 10:59	03/28/17 08:10	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.7		40 - 110	03/06/17 10:59	03/28/17 08:10	1

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.132		0.0855	0.0864	1.00	0.111	pCi/L	03/06/17 10:59	03/28/17 08:10	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110	03/06/17 10:59	03/28/17 08:10	1

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.414		0.142	0.146	1.00	0.143	pCi/L	03/06/17 10:59	03/28/17 08:10	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	83.2		40 - 110	03/06/17 10:59	03/28/17 08:10	1

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0854	U	0.0764	0.0768	1.00	0.116	pCi/L	03/06/17 10:59	03/28/17 08:11	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110	03/06/17 10:59	03/28/17 08:11	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.000	U	0.0496	0.0496	1.00	0.105	pCi/L	03/06/17 11:06	03/28/17 08:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*03/06/17 11:06*	*03/28/17 08:11*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.453**		0.237	0.241	1.00	0.350	pCi/L	03/06/17 13:06	03/20/17 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.0*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:58*	*1*
Y Carrier	*92.0*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:58*	*1*

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.484**		0.237	0.241	1.00	0.346	pCi/L	03/06/17 13:06	03/20/17 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*
Y Carrier	*91.6*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.280	U	0.215	0.217	1.00	0.339	pCi/L	03/06/17 13:06	03/20/17 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.4*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*
Y Carrier	*93.5*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0968	U	0.232	0.232	1.00	0.399	pCi/L	03/06/17 13:06	03/20/17 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.2*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*
Y Carrier	*94.2*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.448**		0.221	0.225	1.00	0.319	pCi/L	03/06/17 13:06	03/20/17 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.2*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*
Y Carrier	*86.7*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.231	U	0.173	0.174	1.00	0.360	pCi/L	03/06/17 13:06	03/20/17 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*
Y Carrier	*83.7*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:59*	*1*

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

Client Sample ID: MW-8
Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.633**		0.257	0.260	5.00	0.350	pCi/L		03/28/17 17:12	1

Client Sample ID: MW-9
Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.623**		0.253	0.257	5.00	0.346	pCi/L		03/28/17 17:12	1

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

Client Sample ID: MW-10
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.412		0.232	0.233	5.00	0.339	pCi/L		03/28/17 17:12	1

Client Sample ID: MW-13
Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.511		0.272	0.274	5.00	0.399	pCi/L		03/28/17 17:12	1

Client Sample ID: MW10-D
Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.534		0.234	0.237	5.00	0.319	pCi/L		03/28/17 17:12	1

Client Sample ID: MW-9EB
Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.231	U	0.180	0.181	5.00	0.360	pCi/L		03/28/17 17:12	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-269333/1-A
Matrix: Water
Analysis Batch: 269518

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 269333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		03/06/17 14:00	03/07/17 15:15	1

Lab Sample ID: LCS 240-269333/2-A
Matrix: Water
Analysis Batch: 269518

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 269333

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 240-269333/1-A
Matrix: Water
Analysis Batch: 269634

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 269333

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00027	mg/L		03/06/17 14:00	03/07/17 22:19	1
Arsenic	ND		0.0050	0.00035	mg/L		03/06/17 14:00	03/07/17 22:19	1
Barium	0.00167	J	0.0050	0.00052	mg/L		03/06/17 14:00	03/07/17 22:19	1
Beryllium	ND		0.0010	0.00040	mg/L		03/06/17 14:00	03/07/17 22:19	1
Cadmium	ND		0.0010	0.00031	mg/L		03/06/17 14:00	03/07/17 22:19	1
Calcium	0.422	J	1.0	0.043	mg/L		03/06/17 14:00	03/07/17 22:19	1
Chromium	ND		0.0020	0.00026	mg/L		03/06/17 14:00	03/07/17 22:19	1
Cobalt	ND		0.0010	0.00013	mg/L		03/06/17 14:00	03/07/17 22:19	1
Lead	ND		0.0010	0.00016	mg/L		03/06/17 14:00	03/07/17 22:19	1
Lithium	ND		0.0080	0.00016	mg/L		03/06/17 14:00	03/07/17 22:19	1
Molybdenum	ND		0.010	0.00051	mg/L		03/06/17 14:00	03/07/17 22:19	1
Selenium	ND		0.0050	0.00048	mg/L		03/06/17 14:00	03/07/17 22:19	1
Thallium	ND		0.0010	0.00028	mg/L		03/06/17 14:00	03/07/17 22:19	1

Lab Sample ID: LCS 240-269333/26-A
Matrix: Water
Analysis Batch: 269634

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 269333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0900		mg/L		90	80 - 120
Arsenic	1.00	0.929		mg/L		93	80 - 120
Barium	1.00	0.991		mg/L		99	80 - 120
Beryllium	1.00	1.01		mg/L		101	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Calcium	10.0	10.7		mg/L		107	80 - 120
Chromium	1.00	0.989		mg/L		99	80 - 120
Cobalt	1.00	1.02		mg/L		102	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120
Lithium	0.100	0.100		mg/L		100	80 - 120
Molybdenum	0.100	0.0970		mg/L		97	80 - 120
Selenium	1.00	0.985		mg/L		98	80 - 120
Thallium	0.250	0.254		mg/L		102	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-364787/1-A
Matrix: Water
Analysis Batch: 366393

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 364787

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		03/21/17 11:44	03/21/17 18:12	1

Lab Sample ID: LCS 280-364787/2-A
Matrix: Water
Analysis Batch: 366393

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 364787

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00522		mg/L		104	84 - 120		

Lab Sample ID: 280-94335-1 MS
Matrix: Water
Analysis Batch: 366393

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 364787

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00500	0.00508		mg/L		102	75 - 125		

Lab Sample ID: 280-94335-1 MSD
Matrix: Water
Analysis Batch: 366393

Client Sample ID: MW-8
Prep Type: Total/NA
Prep Batch: 364787

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00508		mg/L		102	75 - 125	0	20

Method: 9040B - pH

Lab Sample ID: LCS 280-364292/29
Matrix: Water
Analysis Batch: 364292

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH adj. to 25 deg C			7.00	7.0		SU		101	99 - 101		

Lab Sample ID: LCS 280-364804/29
Matrix: Water
Analysis Batch: 364804

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH adj. to 25 deg C			7.00	7.0		SU		100	99 - 101		

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-364045/13
Matrix: Water
Analysis Batch: 364045

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			03/02/17 12:42	1
Fluoride	ND		0.50	0.060	mg/L			03/02/17 12:42	1
Sulfate	ND		5.0	0.23	mg/L			03/02/17 12:42	1

Lab Sample ID: LCS 280-364045/11
Matrix: Water
Analysis Batch: 364045

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	98.5		mg/L		98	90 - 110		
Fluoride			5.00	5.11		mg/L		102	90 - 110		
Sulfate			100	99.0		mg/L		99	90 - 110		

Lab Sample ID: LCSD 280-364045/12
Matrix: Water
Analysis Batch: 364045

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			100	98.6		mg/L		99	90 - 110	0	10
Fluoride			5.00	5.11		mg/L		102	90 - 110	0	10
Sulfate			100	99.2		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-364045/10
Matrix: Water
Analysis Batch: 364045

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

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			2.50	2.60	J	mg/L		104	50 - 150		
Fluoride			0.200	0.199	J	mg/L		99	50 - 150		
Sulfate			2.50	2.65	J	mg/L		106	50 - 150		

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

Lab Sample ID: MB 280-364046/1
Matrix: Water
Analysis Batch: 364046

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			03/02/17 08:31	1

Lab Sample ID: LCS 280-364046/2
Matrix: Water
Analysis Batch: 364046

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	484		mg/L		97	86 - 110		

Lab Sample ID: 280-94335-1 DU
Matrix: Water
Analysis Batch: 364046

Client Sample ID: MW-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	2800			2800		mg/L				0.6	10

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

Lab Sample ID: MB 280-364469/2
Matrix: Water
Analysis Batch: 364469

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			03/06/17 18:04	1

Lab Sample ID: LCS 280-364469/1
Matrix: Water
Analysis Batch: 364469

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	93.2		mg/L		93	86 - 114

Lab Sample ID: 280-94335-1 DU
Matrix: Water
Analysis Batch: 364469

Client Sample ID: MW-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	12		10.4	F5	mg/L		11	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-296144/1-A
Matrix: Water
Analysis Batch: 300406

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296144

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02067	U	0.0596	0.0596	1.00	0.112	pCi/L	03/06/17 10:59	03/28/17 05:57	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*03/06/17 10:59*	*03/28/17 05:57*	*1*

Lab Sample ID: LCS 160-296144/2-A
Matrix: Water
Analysis Batch: 300406

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296144

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.60		1.21	1.00	0.117	pCi/L	102	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.1*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-296161/1-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296161

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5422		0.282	0.287	1.00	0.423	pCi/L	03/06/17 13:06	03/20/17 15:55	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:55*	*1*
Y Carrier	*82.2*		*40 - 110*	*03/06/17 13:06*	*03/20/17 15:55*	*1*

Lab Sample ID: LCS 160-296161/2-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296161

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			13.7	14.70		1.56	1.00	0.369	pCi/L	107	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.1*		*40 - 110*
Y Carrier	*87.9*		*40 - 110*

Metals

Prep Batch: 269333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total Recoverable	Water	3005A	
280-94335-2	MW-9	Total Recoverable	Water	3005A	
280-94335-3	MW-10	Total Recoverable	Water	3005A	
280-94335-4	MW-13	Total Recoverable	Water	3005A	
280-94335-5	MW10-D	Total Recoverable	Water	3005A	
280-94335-6	MW-9EB	Total Recoverable	Water	3005A	
MB 240-269333/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-269333/26-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-269333/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 269518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total Recoverable	Water	6010C	269333
280-94335-2	MW-9	Total Recoverable	Water	6010C	269333
280-94335-3	MW-10	Total Recoverable	Water	6010C	269333
280-94335-4	MW-13	Total Recoverable	Water	6010C	269333
280-94335-5	MW10-D	Total Recoverable	Water	6010C	269333
280-94335-6	MW-9EB	Total Recoverable	Water	6010C	269333
MB 240-269333/1-A	Method Blank	Total Recoverable	Water	6010C	269333
LCS 240-269333/2-A	Lab Control Sample	Total Recoverable	Water	6010C	269333

Analysis Batch: 269634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total Recoverable	Water	6020A	269333
280-94335-2	MW-9	Total Recoverable	Water	6020A	269333
280-94335-3	MW-10	Total Recoverable	Water	6020A	269333
280-94335-4	MW-13	Total Recoverable	Water	6020A	269333
280-94335-5	MW10-D	Total Recoverable	Water	6020A	269333
280-94335-6	MW-9EB	Total Recoverable	Water	6020A	269333
MB 240-269333/1-A	Method Blank	Total Recoverable	Water	6020A	269333
LCS 240-269333/26-A	Lab Control Sample	Total Recoverable	Water	6020A	269333

Prep Batch: 364787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	7470A	
280-94335-2	MW-9	Total/NA	Water	7470A	
280-94335-3	MW-10	Total/NA	Water	7470A	
280-94335-4	MW-13	Total/NA	Water	7470A	
280-94335-5	MW10-D	Total/NA	Water	7470A	
280-94335-6	MW-9EB	Total/NA	Water	7470A	
MB 280-364787/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-364787/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-94335-1 MS	MW-8	Total/NA	Water	7470A	
280-94335-1 MSD	MW-8	Total/NA	Water	7470A	

Analysis Batch: 366393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	7470A	364787
280-94335-2	MW-9	Total/NA	Water	7470A	364787
280-94335-3	MW-10	Total/NA	Water	7470A	364787
280-94335-4	MW-13	Total/NA	Water	7470A	364787

Metals (Continued)

Analysis Batch: 366393 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-5	MW10-D	Total/NA	Water	7470A	364787
280-94335-6	MW-9EB	Total/NA	Water	7470A	364787
MB 280-364787/1-A	Method Blank	Total/NA	Water	7470A	364787
LCS 280-364787/2-A	Lab Control Sample	Total/NA	Water	7470A	364787
280-94335-1 MS	MW-8	Total/NA	Water	7470A	364787
280-94335-1 MSD	MW-8	Total/NA	Water	7470A	364787

General Chemistry

Analysis Batch: 364045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	9056A	
280-94335-1	MW-8	Total/NA	Water	9056A	
280-94335-2	MW-9	Total/NA	Water	9056A	
280-94335-2	MW-9	Total/NA	Water	9056A	
280-94335-3	MW-10	Total/NA	Water	9056A	
280-94335-3	MW-10	Total/NA	Water	9056A	
280-94335-4	MW-13	Total/NA	Water	9056A	
280-94335-4	MW-13	Total/NA	Water	9056A	
280-94335-5	MW10-D	Total/NA	Water	9056A	
280-94335-5	MW10-D	Total/NA	Water	9056A	
280-94335-6	MW-9EB	Total/NA	Water	9056A	
MB 280-364045/13	Method Blank	Total/NA	Water	9056A	
LCS 280-364045/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-364045/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-364045/10	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 364046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	SM 2540C	
280-94335-2	MW-9	Total/NA	Water	SM 2540C	
280-94335-3	MW-10	Total/NA	Water	SM 2540C	
280-94335-4	MW-13	Total/NA	Water	SM 2540C	
280-94335-5	MW10-D	Total/NA	Water	SM 2540C	
280-94335-6	MW-9EB	Total/NA	Water	SM 2540C	
MB 280-364046/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-364046/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-94335-1 DU	MW-8	Total/NA	Water	SM 2540C	

Analysis Batch: 364292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	9040B	
280-94335-2	MW-9	Total/NA	Water	9040B	
280-94335-3	MW-10	Total/NA	Water	9040B	
280-94335-4	MW-13	Total/NA	Water	9040B	
280-94335-5	MW10-D	Total/NA	Water	9040B	
LCS 280-364292/29	Lab Control Sample	Total/NA	Water	9040B	

General Chemistry (Continued)

Analysis Batch: 364469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	SM 2540D	
280-94335-2	MW-9	Total/NA	Water	SM 2540D	
280-94335-3	MW-10	Total/NA	Water	SM 2540D	
280-94335-4	MW-13	Total/NA	Water	SM 2540D	
280-94335-5	MW10-D	Total/NA	Water	SM 2540D	
280-94335-6	MW-9EB	Total/NA	Water	SM 2540D	
MB 280-364469/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-364469/1	Lab Control Sample	Total/NA	Water	SM 2540D	
280-94335-1 DU	MW-8	Total/NA	Water	SM 2540D	

Analysis Batch: 364804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-6	MW-9EB	Total/NA	Water	9040B	
LCS 280-364804/29	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 296144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	PrecSep-21	
280-94335-2	MW-9	Total/NA	Water	PrecSep-21	
280-94335-3	MW-10	Total/NA	Water	PrecSep-21	
280-94335-4	MW-13	Total/NA	Water	PrecSep-21	
280-94335-5	MW10-D	Total/NA	Water	PrecSep-21	
280-94335-6	MW-9EB	Total/NA	Water	PrecSep-21	
MB 160-296144/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-296144/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 296161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94335-1	MW-8	Total/NA	Water	PrecSep_0	
280-94335-2	MW-9	Total/NA	Water	PrecSep_0	
280-94335-3	MW-10	Total/NA	Water	PrecSep_0	
280-94335-4	MW-13	Total/NA	Water	PrecSep_0	
280-94335-5	MW10-D	Total/NA	Water	PrecSep_0	
280-94335-6	MW-9EB	Total/NA	Water	PrecSep_0	
MB 160-296161/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-296161/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-94335-1

Client Sample ID: MW-8

Date Collected: 02/27/17 14:10
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-1
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	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			269518	03/07/17 15:44	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			269634	03/07/17 22:56	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	364787	03/21/17 11:44	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366393	03/21/17 18:21	CDH	TAL DEN
Total/NA	Analysis	9040B		1			364292	03/03/17 13:35	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	364045	03/02/17 23:25	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	364045	03/02/17 23:42	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	364046	03/02/17 08:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	364469	03/06/17 18:04	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.14 mL	1.0 g	296144	03/06/17 10:59	MBC	TAL SL
Total/NA	Analysis	9315		1			300406	03/28/17 08:10	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.14 mL	1.0 g	296161	03/06/17 13:06	MBC	TAL SL
Total/NA	Analysis	9320		1			298258	03/20/17 15:58	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			300449	03/28/17 17:12	RTM	TAL SL

Client Sample ID: MW-9

Date Collected: 02/27/17 12:55
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-2
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	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			269518	03/07/17 15:57	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			269634	03/07/17 23:00	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	364787	03/21/17 11:44	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366393	03/21/17 18:27	CDH	TAL DEN
Total/NA	Analysis	9040B		1			364292	03/03/17 13:40	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	364045	03/02/17 23:59	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	364045	03/03/17 00:15	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	364046	03/02/17 08:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	364469	03/06/17 18:04	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.06 mL	1.0 g	296144	03/06/17 10:59	MBC	TAL SL
Total/NA	Analysis	9315		1			300406	03/28/17 08:10	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.06 mL	1.0 g	296161	03/06/17 13:06	MBC	TAL SL
Total/NA	Analysis	9320		1			298258	03/20/17 15:59	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			300449	03/28/17 17:12	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-94335-1

Client Sample ID: MW-10

Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-3
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	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			269518	03/07/17 16:02	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			269634	03/07/17 23:05	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	364787	03/21/17 11:44	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366393	03/21/17 18:29	CDH	TAL DEN
Total/NA	Analysis	9040B		1			364292	03/03/17 13:45	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	364045	03/03/17 00:32	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	364045	03/03/17 00:49	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	364046	03/02/17 08:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	364469	03/06/17 18:04	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.56 mL	1.0 g	296144	03/06/17 10:59	MBC	TAL SL
Total/NA	Analysis	9315		1			300406	03/28/17 08:10	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.56 mL	1.0 g	296161	03/06/17 13:06	MBC	TAL SL
Total/NA	Analysis	9320		1			298258	03/20/17 15:59	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			300449	03/28/17 17:12	RTM	TAL SL

Client Sample ID: MW-13

Date Collected: 03/01/17 09:45
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-4
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	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			269518	03/07/17 16:06	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			269634	03/07/17 23:09	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	364787	03/21/17 11:44	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366393	03/21/17 18:32	CDH	TAL DEN
Total/NA	Analysis	9040B		1			364292	03/03/17 13:50	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	364045	03/03/17 01:06	AFB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	364045	03/03/17 01:23	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	364046	03/02/17 08:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	364469	03/06/17 18:04	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	296144	03/06/17 10:59	MBC	TAL SL
Total/NA	Analysis	9315		1			300406	03/28/17 08:10	ALD	TAL SL
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	296161	03/06/17 13:06	MBC	TAL SL
Total/NA	Analysis	9320		1			298258	03/20/17 15:59	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			300449	03/28/17 17:12	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-94335-1

Client Sample ID: MW10-D

Date Collected: 02/27/17 11:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-5

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	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			269518	03/07/17 16:11	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			269634	03/07/17 23:13	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	364787	03/21/17 11:44	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366393	03/21/17 18:34	CDH	TAL DEN
Total/NA	Analysis	9040B		1			364292	03/03/17 13:55	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	364045	03/03/17 01:40	AFB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	364045	03/03/17 01:56	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	364046	03/02/17 08:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	364469	03/06/17 18:04	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.61 mL	1.0 g	296144	03/06/17 10:59	MBC	TAL SL
Total/NA	Analysis	9315		1			300406	03/28/17 08:11	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.61 mL	1.0 g	296161	03/06/17 13:06	MBC	TAL SL
Total/NA	Analysis	9320		1			298258	03/20/17 15:59	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			300449	03/28/17 17:12	RTM	TAL SL

Client Sample ID: MW-9EB

Date Collected: 02/27/17 13:20
Date Received: 03/01/17 15:50

Lab Sample ID: 280-94335-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			269518	03/07/17 16:15	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	269333	03/06/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			269634	03/07/17 23:17	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	364787	03/21/17 11:44	CDH	TAL DEN
Total/NA	Analysis	7470A		1			366393	03/21/17 18:36	CDH	TAL DEN
Total/NA	Analysis	9040B		1			364804	03/08/17 13:51	CCJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	364045	03/03/17 02:47	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	364046	03/02/17 08:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	364469	03/06/17 18:04	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			999.59 mL	1.0 g	296144	03/06/17 11:06	MBC	TAL SL
Total/NA	Analysis	9315		1			300406	03/28/17 08:11	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.59 mL	1.0 g	296161	03/06/17 13:06	MBC	TAL SL
Total/NA	Analysis	9320		1			298258	03/20/17 15:59	MLK	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			300449	03/28/17 17:12	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 - Cherokee

TestAmerica Job ID: 280-94335-1

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
Oregon	NELAP	10	4025	01-08-18

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

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

Analysis Method	Prep Method	Matrix	Analyte
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	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	03-31-17 *
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 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	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

* Certification renewal pending - certification considered valid.

Certification Summary

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

TestAmerica Job ID: 280-94335-1

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	LA170011	12-31-17
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 *

* 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: 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 - Cherokee	Project #: 28014371			
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_Ra228, 9320_Ra228	Total Number of containers	Special Instructions/Note:
Preservation Code:					X	X	N	D	N	N	D	X	
~~MW-7~~ TK				~~Water~~	N								e
MW-8	2.27.17	1410	C	Water	N		✓	✓	✓	✓			
MW-9	2.27.17	1255	C	Water	N		✓	✓	✓	✓	✓		
MW-10	2.27.17	1120	C	Water	N		✓	✓	✓	✓	✓		
MW-13	3-1-17	0945	C	Water	N		✓	✓	✓	✓	✓		
~~Field Duplicate~~ TK MW-18D	2.27.17	1120	C	Water	N		✓	✓	✓	✓	✓		
~~Equipment Blank~~ TK MW-9EB	2.27.17	1320	C	Water	N		✓	✓	✓	✓	✓		

280-94335 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: 3-1-17	Time: 1550	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
			Received	3-1-17 1550	T4P
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Cooler Temperature(s) °C and Other Remarks: 5.9° IR#7, -0.0 3/1/17 GP
5.3° IR#7, -0.0 3/2/17 NCB

3/28/2017

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

280-94335 Chain of Custody

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Steph.		COC No: 280-389541.1
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): NELAP - Oregon		Job #: 280-94335-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 3/30/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee Station	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-8 (280-94335-1)	2/27/17	14:10 Mountain		Water			X	X	X	2	
MW-9 (280-94335-2)	2/27/17	12:55 Mountain		Water			X	X	X	2	
MW-10 (280-94335-3)	2/27/17	11:20 Mountain		Water			X	X	X	2	
MW-13 (280-94335-4)	3/1/17	09:45 Mountain		Water			X	X	X	2	
MW10-D (280-94335-5)	2/27/17	11:20 Mountain		Water			X	X	X	2	
MW-9EB (280-94335-6)	2/27/17	13:20 Mountain		Water			X	X	X	2	

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

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: Rhonda Tune	Date/Time: 3/2/17 1515	Company TAD	Received by: Kristen Taylor	Date/Time: 3/3/17 1020	Company TASL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

3/28/2017

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

4.4 | C4.1

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: 280-389540.1
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): NELAP - Oregon		Job #: 280-94335-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 3/27/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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:

S12

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 Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-8 (280-94335-1)	2/27/17	14:10 Mountain		Water			X	X	1	, Use Collision Cell
MW-9 (280-94335-2)	2/27/17	12:55 Mountain		Water			X	X	1	Use Collision Cell
MW-10 (280-94335-3)	2/27/17	11:20 Mountain		Water			X	X	1	, Use Collision Cell
MW-13 (280-94335-4)	3/1/17	09:45 Mountain		Water			X	X	1	Use Collision Cell
MW10-D (280-94335-5)	2/27/17	11:20 Mountain		Water			X	X	1	, Use Collision Cell
MW-9EB (280-94335-6)	2/27/17	13:20 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
Patricia Tull	3/2/17 1525	TAD	POP	3-3-17 950	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

TestAmerica Canton Sample Receipt Form/Narrative Login # :_____

Canton Facility

Client TA DENVER Site Name _____ Cooler unpacked by: POP

Cooler Received on 3-3-17 Opened on 3-3-17

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

☐ See Multiple Cooler Form

1. Cooler temperature upon receipt
   IR GUN# IR-8 (CF **-0.3** °C) Observed Cooler Temp. 4.4 °C Corrected Cooler Temp. 4.1 °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): _____

Ref: SOP NC-SC-0005, Sample Receiving

\\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\In Revision\WI-NC-099-022817 Cooler Receipt Form.doc djl

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-94335-1

Login Number: 94335
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.	False	Refer to Job Narrative for details.
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: 280-94335-1

Login Number: 94335
List Number: 2
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 03/03/17 01:59 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	19.0
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 - Cherokee

TestAmerica Job ID: 280-94335-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
280-94335-1	MW-8	90.0
280-94335-2	MW-9	94.7
280-94335-3	MW-10	91.4
280-94335-4	MW-13	83.2
280-94335-5	MW10-D	98.2
280-94335-6	MW-9EB	97.1
LCS 160-296144/2-A	Lab Control Sample	99.1
MB 160-296144/1-A	Method Blank	97.1

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)
280-94335-1	MW-8	90.0	92.0
280-94335-2	MW-9	94.7	91.6
280-94335-3	MW-10	91.4	93.5
280-94335-4	MW-13	83.2	94.2
280-94335-5	MW10-D	98.2	86.7
280-94335-6	MW-9EB	97.1	83.7
LCS 160-296161/2-A	Lab Control Sample	99.1	87.9
MB 160-296161/1-A	Method Blank	97.1	82.2

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: 280-97178-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
6/14/2017 2:12:41 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 - Cherokee

TestAmerica Job ID: 280-97178-1

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.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

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

Glossary

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

Job ID: 280-97178-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-97178-1

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 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.1º C and 5.4º C.

TOTAL RECOVERABLE METALS
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/18/2017 and analyzed on 05/19/2017.

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

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 05/18/2017 and analyzed on 05/24/2017.

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

TOTAL MERCURY
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) 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-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for total dissolved solids in accordance with SM20 2540C. 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.

TOTAL SUSPENDED SOLIDS
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 05/17/2017.

Job ID: 280-97178-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following sample was diluted due to slow filtration and high Total Suspended Solids: MW-7 (280-97178-1). Elevated reporting limits (RLs) are provided.

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

CORROSIVITY (PH)
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 05/18/2017 and 05/19/2017.

The following samples are not associated with a duplicate sample due to the duplicate sample failing to reaching constant pH: MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4). 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-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) 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.

Sulfate was detected in method blank MB 280-376688/6 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 MSD of sample 280-97629-2 in batch 280-376688. 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-7 (280-97178-1)[10X], MW-10 (280-97178-2)[10X] and MW-10D (280-97178-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 05/19/2017 and analyzed on 06/12/2017.

The following samples were reduced due to limited volume: MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4), MW-13EB (280-97178-5).

Insufficient sample volume was available to perform a sample duplicate (DU) associated with prep batch 160-309412.

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

RADIUM-228
Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 05/19/2017 and analyzed on 06/01/2017.

The following samples were reduced due to limited volume: MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4), MW-13EB (280-97178-5).

Insufficient sample volume was available to perform a sample duplicate (DU) associated with prep batch 160-309413.

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

RADIUM-226/RADIUM-228 (GFPC)

Job ID: 280-97178-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples MW-7 (280-97178-1), MW-10 (280-97178-2), MW-13 (280-97178-3), MW-10D (280-97178-4) and MW-13EB (280-97178-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 06/14/2017.

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 - Cherokee

TestAmerica Job ID: 280-97178-1

Client Sample ID: MW-7 — Lab Sample ID: 280-97178-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.4		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.00062	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.013		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.27		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0031		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00089	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Calcium	300		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.088		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.017		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.045		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.093		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.011		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0067		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00091	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Mercury	0.000043	J	0.00020	0.000027	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	730		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	620	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1400		20	5.5	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 280-97178-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.7		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0022		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0039	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.061		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00083	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Calcium	360		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0036		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.10		0.0080	0.0017	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 - Cherokee

TestAmerica Job ID: 280-97178-1

Client Sample ID: MW-10 (Continued) — Lab Sample ID: 280-97178-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.063		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0036	J	0.0050	0.00089	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	22.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	600		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.7		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2800		20	9.4	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-13 — Lab Sample ID: 280-97178-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.48		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.00097	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.099		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	140		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0064		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00097	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.0013		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.031		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0022	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	170		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	180	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	890		10	4.7	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	35		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10D — Lab Sample ID: 280-97178-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.8		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0026		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0045	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.069		0.0050	0.0022	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample ID: MW-10D (Continued)

Lab Sample ID: 280-97178-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00096	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Calcium	440		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0041		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.073		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0039	J	0.0050	0.00089	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	600		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.7		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2800		20	9.4	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-13EB

Lab Sample ID: 280-97178-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.0092	J	0.20	0.0081	mg/L	1		6010C	Total Recoverable
Barium	0.0054		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	1.2		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.0	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	1.2	J	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	2.3	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 - Cherokee

TestAmerica Job ID: 280-97178-1

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 - Cherokee

TestAmerica Job ID: 280-97178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-97178-1	MW-7	Water	05/15/17 14:10	05/16/17 10:35
280-97178-2	MW-10	Water	05/15/17 12:05	05/16/17 10:35
280-97178-3	MW-13	Water	05/15/17 13:20	05/16/17 10:35
280-97178-4	MW-10D	Water	05/15/17 12:20	05/16/17 10:35
280-97178-5	MW-13EB	Water	05/15/17 13:40	05/16/17 10:35

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

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.4		0.20	0.0081	mg/L		05/18/17 14:00	05/19/17 16:40	1

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.7		0.20	0.0081	mg/L		05/18/17 14:00	05/19/17 16:45	1

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.48		0.20	0.0081	mg/L		05/18/17 14:00	05/19/17 16:58	1

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.8		0.20	0.0081	mg/L		05/18/17 14:00	05/19/17 17:03	1

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.0092	J	0.20	0.0081	mg/L		05/18/17 14:00	05/19/17 17:07	1

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

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00062	J	0.0020	0.00057	mg/L		05/18/17 14:00	05/24/17 01:11	1
Arsenic	0.013		0.0050	0.00075	mg/L		05/18/17 14:00	05/24/17 01:11	1
Barium	0.27		0.0050	0.0022	mg/L		05/18/17 14:00	05/24/17 01:11	1
Beryllium	0.0031		0.0010	0.00031	mg/L		05/18/17 14:00	05/24/17 15:22	1
Cadmium	0.00089	J	0.0010	0.00021	mg/L		05/18/17 14:00	05/24/17 01:11	1
Calcium	300		1.0	0.58	mg/L		05/18/17 14:00	05/24/17 01:11	1
Chromium	0.088		0.0020	0.00098	mg/L		05/18/17 14:00	05/24/17 01:11	1
Cobalt	0.017		0.0010	0.00019	mg/L		05/18/17 14:00	05/24/17 01:11	1
Lead	0.045		0.0010	0.00045	mg/L		05/18/17 14:00	05/24/17 01:11	1
Lithium	0.093		0.0080	0.0017	mg/L		05/18/17 14:00	05/24/17 01:11	1
Molybdenum	0.011		0.010	0.0011	mg/L		05/18/17 14:00	05/24/17 01:11	1
Selenium	0.0067		0.0050	0.00089	mg/L		05/18/17 14:00	05/24/17 01:11	1
Thallium	0.00091	J	0.0010	0.00020	mg/L		05/18/17 14:00	05/24/17 01:11	1

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0022		0.0020	0.00057	mg/L		05/18/17 14:00	05/24/17 01:15	1

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

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0039	J	0.0050	0.00075	mg/L		05/18/17 14:00	05/24/17 01:15	1
Barium	0.061		0.0050	0.0022	mg/L		05/18/17 14:00	05/24/17 01:15	1
Beryllium	ND		0.0010	0.00031	mg/L		05/18/17 14:00	05/24/17 01:15	1
Cadmium	0.00083	J	0.0010	0.00021	mg/L		05/18/17 14:00	05/24/17 01:15	1
Calcium	360		1.0	0.58	mg/L		05/18/17 14:00	05/24/17 01:15	1
Chromium	ND		0.0020	0.00098	mg/L		05/18/17 14:00	05/24/17 01:15	1
Cobalt	0.0036		0.0010	0.00019	mg/L		05/18/17 14:00	05/24/17 01:15	1
Lead	ND		0.0010	0.00045	mg/L		05/18/17 14:00	05/24/17 01:15	1
Lithium	0.10		0.0080	0.0017	mg/L		05/18/17 14:00	05/24/17 01:15	1
Molybdenum	0.063		0.010	0.0011	mg/L		05/18/17 14:00	05/24/17 01:15	1
Selenium	0.0036	J	0.0050	0.00089	mg/L		05/18/17 14:00	05/24/17 01:15	1
Thallium	ND		0.0010	0.00020	mg/L		05/18/17 14:00	05/24/17 01:15	1

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/18/17 14:00	05/24/17 01:28	1
Arsenic	0.00097	J	0.0050	0.00075	mg/L		05/18/17 14:00	05/24/17 01:28	1
Barium	0.099		0.0050	0.0022	mg/L		05/18/17 14:00	05/24/17 01:28	1
Beryllium	ND		0.0010	0.00031	mg/L		05/18/17 14:00	05/24/17 01:28	1
Cadmium	ND		0.0010	0.00021	mg/L		05/18/17 14:00	05/24/17 01:28	1
Calcium	140		1.0	0.58	mg/L		05/18/17 14:00	05/24/17 01:28	1
Chromium	0.0064		0.0020	0.00098	mg/L		05/18/17 14:00	05/24/17 01:28	1
Cobalt	0.00097	J	0.0010	0.00019	mg/L		05/18/17 14:00	05/24/17 01:28	1
Lead	0.0013		0.0010	0.00045	mg/L		05/18/17 14:00	05/24/17 01:28	1
Lithium	0.031		0.0080	0.0017	mg/L		05/18/17 14:00	05/24/17 01:28	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		05/18/17 14:00	05/24/17 01:28	1
Selenium	0.0022	J	0.0050	0.00089	mg/L		05/18/17 14:00	05/24/17 01:28	1
Thallium	ND		0.0010	0.00020	mg/L		05/18/17 14:00	05/24/17 01:28	1

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0026		0.0020	0.00057	mg/L		05/18/17 14:00	05/24/17 01:32	1
Arsenic	0.0045	J	0.0050	0.00075	mg/L		05/18/17 14:00	05/24/17 01:32	1
Barium	0.069		0.0050	0.0022	mg/L		05/18/17 14:00	05/24/17 01:32	1
Beryllium	ND		0.0010	0.00031	mg/L		05/18/17 14:00	05/24/17 01:32	1
Cadmium	0.00096	J	0.0010	0.00021	mg/L		05/18/17 14:00	05/24/17 01:32	1
Calcium	440		1.0	0.58	mg/L		05/18/17 14:00	05/24/17 01:32	1
Chromium	ND		0.0020	0.00098	mg/L		05/18/17 14:00	05/24/17 01:32	1
Cobalt	0.0041		0.0010	0.00019	mg/L		05/18/17 14:00	05/24/17 01:32	1
Lead	ND		0.0010	0.00045	mg/L		05/18/17 14:00	05/24/17 01:32	1
Lithium	0.11		0.0080	0.0017	mg/L		05/18/17 14:00	05/24/17 01:32	1
Molybdenum	0.073		0.010	0.0011	mg/L		05/18/17 14:00	05/24/17 01:32	1
Selenium	0.0039	J	0.0050	0.00089	mg/L		05/18/17 14:00	05/24/17 01:32	1
Thallium	ND		0.0010	0.00020	mg/L		05/18/17 14:00	05/24/17 01:32	1

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

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/18/17 14:00	05/24/17 01:36	1
Arsenic	ND		0.0050	0.00075	mg/L		05/18/17 14:00	05/24/17 01:36	1
Barium	**0.0054**		0.0050	0.0022	mg/L		05/18/17 14:00	05/24/17 01:36	1
Beryllium	ND		0.0010	0.00031	mg/L		05/18/17 14:00	05/24/17 01:36	1
Cadmium	ND		0.0010	0.00021	mg/L		05/18/17 14:00	05/24/17 01:36	1
Calcium	**1.2**		1.0	0.58	mg/L		05/18/17 14:00	05/24/17 01:36	1
Chromium	ND		0.0020	0.00098	mg/L		05/18/17 14:00	05/24/17 01:36	1
Cobalt	ND		0.0010	0.00019	mg/L		05/18/17 14:00	05/24/17 01:36	1
Lead	ND		0.0010	0.00045	mg/L		05/18/17 14:00	05/24/17 01:36	1
Lithium	ND		0.0080	0.0017	mg/L		05/18/17 14:00	05/24/17 01:36	1
Molybdenum	ND		0.010	0.0011	mg/L		05/18/17 14:00	05/24/17 01:36	1
Selenium	ND		0.0050	0.00089	mg/L		05/18/17 14:00	05/24/17 01:36	1
Thallium	ND		0.0010	0.00020	mg/L		05/18/17 14:00	05/24/17 01:36	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000043**	**J**	0.00020	0.000027	mg/L		05/31/17 11:49	05/31/17 16:16	1

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

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 16:23	1

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

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 16:25	1

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

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 16:32	1

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

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 16:34	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			05/19/17 19:56	1
Temperature	21.8	HF	1.0	1.0	Degrees C			05/19/17 19:56	1
Chloride	730		30	2.5	mg/L			06/10/17 02:08	10
Fluoride	1.2		0.50	0.060	mg/L			06/09/17 10:44	1
Sulfate	620	B	50	2.3	mg/L			06/10/17 02:08	10
Total Dissolved Solids (TDS)	2200		20	9.4	mg/L			05/19/17 08:09	1
Total Suspended Solids	1400		20	5.5	mg/L			05/17/17 19:59	1

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

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			05/18/17 13:39	1
Temperature	22.4	HF	1.0	1.0	Degrees C			05/18/17 13:39	1
Chloride	600		30	2.5	mg/L			06/10/17 02:25	10
Fluoride	2.7		0.50	0.060	mg/L			06/09/17 11:01	1
Sulfate	1300	B	50	2.3	mg/L			06/10/17 02:25	10
Total Dissolved Solids (TDS)	2800		20	9.4	mg/L			05/19/17 08:09	1
Total Suspended Solids	5.6		4.0	1.1	mg/L			05/17/17 19:59	1

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			05/18/17 14:03	1
Temperature	22.4	HF	1.0	1.0	Degrees C			05/18/17 14:03	1
Chloride	170		3.0	0.25	mg/L			06/09/17 11:18	1
Fluoride	1.2		0.50	0.060	mg/L			06/09/17 11:18	1
Sulfate	180	B	5.0	0.23	mg/L			06/09/17 11:18	1
Total Dissolved Solids (TDS)	890		10	4.7	mg/L			05/19/17 08:09	1
Total Suspended Solids	35		4.0	1.1	mg/L			05/17/17 19:59	1

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

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 13:58	1
Temperature	22.2	HF	1.0	1.0	Degrees C			05/18/17 13:58	1
Chloride	600		30	2.5	mg/L			06/10/17 02:41	10
Fluoride	2.7		0.50	0.060	mg/L			06/09/17 11:35	1
Sulfate	1300	B	50	2.3	mg/L			06/10/17 02:41	10
Total Dissolved Solids (TDS)	2800		20	9.4	mg/L			05/19/17 08:09	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			05/17/17 19:59	1

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.0	HF	0.1	0.1	SU			05/19/17 19:51	1
Temperature	21.7	HF	1.0	1.0	Degrees C			05/19/17 19:51	1

General Chemistry (Continued)

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.2**	**J**	3.0	0.25	mg/L			06/09/17 11:52	1
Fluoride	ND		0.50	0.060	mg/L			06/09/17 11:52	1
Sulfate	**2.3**	**J B**	5.0	0.23	mg/L			06/09/17 11:52	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/19/17 08:09	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/17/17 19:59	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.597**		0.160	0.169	1.00	0.111	pCi/L	05/19/17 09:34	06/12/17 07:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.1*		*40 - 110*	*05/19/17 09:34*	*06/12/17 07:00*	*1*

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0875	U	0.0783	0.0787	1.00	0.117	pCi/L	05/19/17 09:34	06/12/17 07:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*05/19/17 09:34*	*06/12/17 07:01*	*1*

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.356**		0.138	0.142	1.00	0.141	pCi/L	05/19/17 09:34	06/12/17 07:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*05/19/17 09:34*	*06/12/17 07:02*	*1*

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.169**		0.106	0.107	1.00	0.142	pCi/L	05/19/17 09:34	06/12/17 07:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.3*		*40 - 110*	*05/19/17 09:34*	*06/12/17 07:02*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0309	U	0.0583	0.0584	1.00	0.141	pCi/L	05/19/17 09:34	06/12/17 07:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*05/19/17 09:34*	*06/12/17 07:02*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.01**		0.383	0.394	1.00	0.529	pCi/L	05/19/17 10:01	06/01/17 14:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.1*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*
Y Carrier	*86.0*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.978**		0.353	0.364	1.00	0.479	pCi/L	05/19/17 10:01	06/01/17 14:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*
Y Carrier	*87.5*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.262	U	0.332	0.333	1.00	0.550	pCi/L	05/19/17 10:01	06/01/17 14:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*
Y Carrier	*83.7*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.852		0.345	0.354	1.00	0.480	pCi/L	05/19/17 10:01	06/01/17 14:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.3*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*
Y Carrier	*81.9*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.206	U	0.274	0.275	1.00	0.457	pCi/L	05/19/17 10:01	06/01/17 14:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.9*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*
Y Carrier	*85.2*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:29*	*1*

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

Client Sample ID: MW-7
Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.60		0.415	0.429	5.00	0.529	pCi/L		06/14/17 11:06	1

Client Sample ID: MW-10
Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.07		0.361	0.373	5.00	0.479	pCi/L		06/14/17 11:06	1

Client Sample ID: MW-13
Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.618		0.359	0.362	5.00	0.550	pCi/L		06/14/17 11:06	1

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

Client Sample ID: MW-10D
Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.02**		0.361	0.370	5.00	0.480	pCi/L		06/14/17 11:06	1

Client Sample ID: MW-13EB
Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.175	U	0.280	0.281	5.00	0.457	pCi/L		06/14/17 11:06	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-279459/1-A
Matrix: Water
Analysis Batch: 279711

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		05/18/17 14:00	05/19/17 16:10	1

Lab Sample ID: LCS 240-279459/2-A
Matrix: Water
Analysis Batch: 279711

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.996		mg/L		100	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-279459/1-A
Matrix: Water
Analysis Batch: 280184

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		05/18/17 14:00	05/23/17 23:01	1
Arsenic	ND		0.0050	0.00075	mg/L		05/18/17 14:00	05/23/17 23:01	1
Barium	ND		0.0050	0.0022	mg/L		05/18/17 14:00	05/23/17 23:01	1
Cadmium	ND		0.0010	0.00021	mg/L		05/18/17 14:00	05/23/17 23:01	1
Calcium	ND		1.0	0.58	mg/L		05/18/17 14:00	05/23/17 23:01	1
Chromium	ND		0.0020	0.00098	mg/L		05/18/17 14:00	05/23/17 23:01	1
Cobalt	ND		0.0010	0.00019	mg/L		05/18/17 14:00	05/23/17 23:01	1
Lead	ND		0.0010	0.00045	mg/L		05/18/17 14:00	05/23/17 23:01	1
Lithium	ND		0.0080	0.0017	mg/L		05/18/17 14:00	05/23/17 23:01	1
Molybdenum	ND		0.010	0.0011	mg/L		05/18/17 14:00	05/23/17 23:01	1
Selenium	ND		0.0050	0.00089	mg/L		05/18/17 14:00	05/23/17 23:01	1
Thallium	ND		0.0010	0.00020	mg/L		05/18/17 14:00	05/23/17 23:01	1

Lab Sample ID: MB 240-279459/1-A
Matrix: Water
Analysis Batch: 280377

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00031	mg/L		05/18/17 14:00	05/24/17 15:13	1

Lab Sample ID: LCS 240-279459/3-A
Matrix: Water
Analysis Batch: 280184

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0951		mg/L		95	80 - 120
Arsenic	1.00	0.970		mg/L		97	80 - 120
Barium	1.00	0.976		mg/L		98	80 - 120
Cadmium	1.00	1.01		mg/L		101	80 - 120
Calcium	10.0	9.60		mg/L		96	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Cobalt	1.00	1.04		mg/L		104	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120

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

Lab Sample ID: LCS 240-279459/3-A
Matrix: Water
Analysis Batch: 280184

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.100	0.112		mg/L		112	80 - 120
Molybdenum	0.100	0.0948		mg/L		95	80 - 120
Selenium	1.00	1.00		mg/L		100	80 - 120
Thallium	0.250	0.247		mg/L		99	80 - 120

Lab Sample ID: LCS 240-279459/3-A
Matrix: Water
Analysis Batch: 280377

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 279459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	1.00	1.06		mg/L		106	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-375628/1-A
Matrix: Water
Analysis Batch: 375737

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 375628

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 16:07	1

Lab Sample ID: LCS 280-375628/2-A
Matrix: Water
Analysis Batch: 375737

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 375628

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00487		mg/L		97	84 - 120

Lab Sample ID: 280-97178-1 MS
Matrix: Water
Analysis Batch: 375737

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 375628

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000043	J	0.00500	0.00494		mg/L		98	75 - 125

Lab Sample ID: 280-97178-1 MSD
Matrix: Water
Analysis Batch: 375737

Client Sample ID: MW-7
Prep Type: Total/NA
Prep Batch: 375628

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000043	J	0.00500	0.00497		mg/L		98	75 - 125	0	20

Method: 9040B - pH

Lab Sample ID: LCS 280-374294/30
Matrix: Water
Analysis Batch: 374294

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Lab Sample ID: LCSD 280-374294/31
Matrix: Water
Analysis Batch: 374294

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101	0	5

Lab Sample ID: LCS 280-374374/4
Matrix: Water
Analysis Batch: 374374

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-376688/6
Matrix: Water
Analysis Batch: 376688

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			06/09/17 10:11	1
Fluoride	ND		0.50	0.060	mg/L			06/09/17 10:11	1
Sulfate	0.630	J	5.0	0.23	mg/L			06/09/17 10:11	1

Lab Sample ID: LCS 280-376688/4
Matrix: Water
Analysis Batch: 376688

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	103		mg/L		103	90 - 110
Fluoride	5.00	5.18		mg/L		104	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-376688/5
Matrix: Water
Analysis Batch: 376688

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	103		mg/L		103	90 - 110	0	10
Fluoride	5.00	5.17		mg/L		103	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

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

Lab Sample ID: MRL 280-376688/3
Matrix: Water
Analysis Batch: 376688

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.62	J	mg/L		105	50 - 150
Fluoride	0.200	0.175	J	mg/L		87	50 - 150
Sulfate	2.50	2.68	J	mg/L		107	50 - 150

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

Lab Sample ID: MB 280-374234/1
Matrix: Water
Analysis Batch: 374234

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/19/17 08:09	1

Lab Sample ID: LCS 280-374234/2
Matrix: Water
Analysis Batch: 374234

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	482		mg/L		96	86 - 110

Lab Sample ID: LCSD 280-374234/3
Matrix: Water
Analysis Batch: 374234

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	496		mg/L		99	86 - 110	3	20

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

Lab Sample ID: MB 280-374002/2
Matrix: Water
Analysis Batch: 374002

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			05/17/17 19:59	1

Lab Sample ID: LCS 280-374002/1
Matrix: Water
Analysis Batch: 374002

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	94.4		mg/L		94	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-309412/1-A
Matrix: Water
Analysis Batch: 312922

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 309412

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02018	U	0.0594	0.0594	1.00	0.110	pCi/L	05/19/17 09:34	06/12/17 06:58	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*05/19/17 09:34*	*06/12/17 06:58*	*1*

Lab Sample ID: LCS 160-309412/2-A
Matrix: Water
Analysis Batch: 312922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 309412

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.587		0.999	1.00	0.0920	pCi/L	84	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.7*		*40 - 110*

Lab Sample ID: LCSD 160-309412/3-A
Matrix: Water
Analysis Batch: 312922

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 309412

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	9.651		1.01	1.00	0.0979	pCi/L	85	68 - 137	0.03	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*94.4*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-309413/1-A
Matrix: Water
Analysis Batch: 311425

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 309413

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.05889	U	0.221	0.221	1.00	0.386	pCi/L	05/19/17 10:01	06/01/17 14:28	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:28*	*1*
Y Carrier	*83.0*		*40 - 110*	*05/19/17 10:01*	*06/01/17 14:28*	*1*

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

Lab Sample ID: LCS 160-309413/2-A
Matrix: Water
Analysis Batch: 311425

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 309413

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			13.4	12.81		1.39	1.00	0.331	pCi/L	96	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.7*		*40 - 110*
Y Carrier	*84.9*		*40 - 110*

Lab Sample ID: LCSD 160-309413/3-A
Matrix: Water
Analysis Batch: 311425

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 309413

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			13.4	13.64		1.48	1.00	0.365	pCi/L	102	56 - 140	0.29	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*94.4*		*40 - 110*
Y Carrier	*81.9*		*40 - 110*

Metals

Prep Batch: 279459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total Recoverable	Water	3005A	
280-97178-2	MW-10	Total Recoverable	Water	3005A	
280-97178-3	MW-13	Total Recoverable	Water	3005A	
280-97178-4	MW-10D	Total Recoverable	Water	3005A	
280-97178-5	MW-13EB	Total Recoverable	Water	3005A	
MB 240-279459/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-279459/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-279459/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 279711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total Recoverable	Water	6010C	279459
280-97178-2	MW-10	Total Recoverable	Water	6010C	279459
280-97178-3	MW-13	Total Recoverable	Water	6010C	279459
280-97178-4	MW-10D	Total Recoverable	Water	6010C	279459
280-97178-5	MW-13EB	Total Recoverable	Water	6010C	279459
MB 240-279459/1-A	Method Blank	Total Recoverable	Water	6010C	279459
LCS 240-279459/2-A	Lab Control Sample	Total Recoverable	Water	6010C	279459

Analysis Batch: 280184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total Recoverable	Water	6020A	279459
280-97178-2	MW-10	Total Recoverable	Water	6020A	279459
280-97178-3	MW-13	Total Recoverable	Water	6020A	279459
280-97178-4	MW-10D	Total Recoverable	Water	6020A	279459
280-97178-5	MW-13EB	Total Recoverable	Water	6020A	279459
MB 240-279459/1-A	Method Blank	Total Recoverable	Water	6020A	279459
LCS 240-279459/3-A	Lab Control Sample	Total Recoverable	Water	6020A	279459

Analysis Batch: 280377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total Recoverable	Water	6020A	279459
MB 240-279459/1-A	Method Blank	Total Recoverable	Water	6020A	279459
LCS 240-279459/3-A	Lab Control Sample	Total Recoverable	Water	6020A	279459

Prep Batch: 375628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	7470A	
280-97178-2	MW-10	Total/NA	Water	7470A	
280-97178-3	MW-13	Total/NA	Water	7470A	
280-97178-4	MW-10D	Total/NA	Water	7470A	
280-97178-5	MW-13EB	Total/NA	Water	7470A	
MB 280-375628/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-375628/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-97178-1 MS	MW-7	Total/NA	Water	7470A	
280-97178-1 MSD	MW-7	Total/NA	Water	7470A	

Analysis Batch: 375737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	7470A	375628
280-97178-2	MW-10	Total/NA	Water	7470A	375628

Metals (Continued)

Analysis Batch: 375737 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-3	MW-13	Total/NA	Water	7470A	375628
280-97178-4	MW-10D	Total/NA	Water	7470A	375628
280-97178-5	MW-13EB	Total/NA	Water	7470A	375628
MB 280-375628/1-A	Method Blank	Total/NA	Water	7470A	375628
LCS 280-375628/2-A	Lab Control Sample	Total/NA	Water	7470A	375628
280-97178-1 MS	MW-7	Total/NA	Water	7470A	375628
280-97178-1 MSD	MW-7	Total/NA	Water	7470A	375628

General Chemistry

Analysis Batch: 374002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	SM 2540D	
280-97178-2	MW-10	Total/NA	Water	SM 2540D	
280-97178-3	MW-13	Total/NA	Water	SM 2540D	
280-97178-4	MW-10D	Total/NA	Water	SM 2540D	
280-97178-5	MW-13EB	Total/NA	Water	SM 2540D	
MB 280-374002/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-374002/1	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 374234

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	SM 2540C	
280-97178-2	MW-10	Total/NA	Water	SM 2540C	
280-97178-3	MW-13	Total/NA	Water	SM 2540C	
280-97178-4	MW-10D	Total/NA	Water	SM 2540C	
280-97178-5	MW-13EB	Total/NA	Water	SM 2540C	
MB 280-374234/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-374234/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-374234/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 374294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-2	MW-10	Total/NA	Water	9040B	
280-97178-3	MW-13	Total/NA	Water	9040B	
280-97178-4	MW-10D	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: 374374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	9040B	
280-97178-5	MW-13EB	Total/NA	Water	9040B	
LCS 280-374374/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 376688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	9056A	
280-97178-1	MW-7	Total/NA	Water	9056A	
280-97178-2	MW-10	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 376688 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-2	MW-10	Total/NA	Water	9056A	
280-97178-3	MW-13	Total/NA	Water	9056A	
280-97178-4	MW-10D	Total/NA	Water	9056A	
280-97178-4	MW-10D	Total/NA	Water	9056A	
280-97178-5	MW-13EB	Total/NA	Water	9056A	
MB 280-376688/6	Method Blank	Total/NA	Water	9056A	
LCS 280-376688/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-376688/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-376688/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 309412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	PrecSep-21	
280-97178-2	MW-10	Total/NA	Water	PrecSep-21	
280-97178-3	MW-13	Total/NA	Water	PrecSep-21	
280-97178-4	MW-10D	Total/NA	Water	PrecSep-21	
280-97178-5	MW-13EB	Total/NA	Water	PrecSep-21	
MB 160-309412/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-309412/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-309412/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 309413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-97178-1	MW-7	Total/NA	Water	PrecSep_0	
280-97178-2	MW-10	Total/NA	Water	PrecSep_0	
280-97178-3	MW-13	Total/NA	Water	PrecSep_0	
280-97178-4	MW-10D	Total/NA	Water	PrecSep_0	
280-97178-5	MW-13EB	Total/NA	Water	PrecSep_0	
MB 160-309413/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-309413/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-309413/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-97178-1

Client Sample ID: MW-7

Date Collected: 05/15/17 14:10
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-1

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	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			279711	05/19/17 16:40	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280184	05/24/17 01:11	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280377	05/24/17 15:22	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375628	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 16:16	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374374	05/19/17 19:56	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376688	06/09/17 10:44	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	376688	06/10/17 02:08	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	374234	05/19/17 08:09	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	374002	05/17/17 19:59	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			749.14 mL	1.0 g	309412	05/19/17 09:34	LDE	TAL SL
Total/NA	Analysis	9315		1			312922	06/12/17 07:00	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.14 mL	1.0 g	309413	05/19/17 10:01	LDE	TAL SL
Total/NA	Analysis	9320		1			311425	06/01/17 14:29	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313373	06/14/17 11:06	RTM	TAL SL

Client Sample ID: MW-10

Date Collected: 05/15/17 12:05
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-2

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	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			279711	05/19/17 16:45	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280184	05/24/17 01:15	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375628	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 16:23	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374294	05/18/17 13:39	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376688	06/09/17 11:01	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	376688	06/10/17 02:25	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	374234	05/19/17 08:09	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374002	05/17/17 19:59	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			750.19 mL	1.0 g	309412	05/19/17 09:34	LDE	TAL SL
Total/NA	Analysis	9315		1			312922	06/12/17 07:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.19 mL	1.0 g	309413	05/19/17 10:01	LDE	TAL SL
Total/NA	Analysis	9320		1			311425	06/01/17 14:29	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313373	06/14/17 11:06	RTM	TAL SL

Client Sample ID: MW-13

Date Collected: 05/15/17 13:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-3
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	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			279711	05/19/17 16:58	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280184	05/24/17 01:28	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375628	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 16:25	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374294	05/18/17 14:03	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376688	06/09/17 11:18	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	374234	05/19/17 08:09	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374002	05/17/17 19:59	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			750.34 mL	1.0 g	309412	05/19/17 09:34	LDE	TAL SL
Total/NA	Analysis	9315		1			313012	06/12/17 07:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.34 mL	1.0 g	309413	05/19/17 10:01	LDE	TAL SL
Total/NA	Analysis	9320		1			311425	06/01/17 14:29	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313373	06/14/17 11:06	RTM	TAL SL

Client Sample ID: MW-10D

Date Collected: 05/15/17 12:20
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-4
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	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			279711	05/19/17 17:03	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280184	05/24/17 01:32	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375628	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 16:32	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374294	05/18/17 13:58	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376688	06/09/17 11:35	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	376688	06/10/17 02:41	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	374234	05/19/17 08:09	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374002	05/17/17 19:59	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			750.51 mL	1.0 g	309412	05/19/17 09:34	LDE	TAL SL
Total/NA	Analysis	9315		1			313012	06/12/17 07:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.51 mL	1.0 g	309413	05/19/17 10:01	LDE	TAL SL
Total/NA	Analysis	9320		1			311425	06/01/17 14:29	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313373	06/14/17 11:06	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-97178-1

Client Sample ID: MW-13EB

Date Collected: 05/15/17 13:40
Date Received: 05/16/17 10:35

Lab Sample ID: 280-97178-5

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	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			279711	05/19/17 17:07	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	279459	05/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			280184	05/24/17 01:36	AS1	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	375628	05/31/17 11:49	CDH	TAL DEN
Total/NA	Analysis	7470A		1			375737	05/31/17 16:34	CDH	TAL DEN
Total/NA	Analysis	9040B		1			374374	05/19/17 19:51	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	376688	06/09/17 11:52	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	374234	05/19/17 08:09	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	374002	05/17/17 19:59	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			750.69 mL	1.0 g	309412	05/19/17 09:34	LDE	TAL SL
Total/NA	Analysis	9315		1			313012	06/12/17 07:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.69 mL	1.0 g	309413	05/19/17 10:01	LDE	TAL SL
Total/NA	Analysis	9320		1			311425	06/01/17 14:29	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			313373	06/14/17 11:06	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 - Cherokee

TestAmerica Job ID: 280-97178-1

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
Oregon	NELAP	10	4025	01-08-18

The following analytes are included in this report, but are not accredited/certified under this accreditation/certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

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

Analysis Method	Prep Method	Matrix	Analyte
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 *

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

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-97178-1
Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Louisiana (DW)	NELAP	6	LA170011	12-31-17
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

280-97178 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: J. Bills	Lab PM: Rothmeyer, Stephanie K	COC No: 001
Client Contact: Anna Lundin	Phone: 518-331-7027	E-Mail: stephanie.rothmeyer@testa...	Page 1 of 1
Company: HDR Inc			Job #:
Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:		
City: Englewood	TAT Requested (days): Standard		
State, Zip: CO, 80112			
Phone: 720-633-2380(Tel)	PO #: DEN-001		
Email: anna.lundin@hdrinc.com	WO #:		
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371		
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-7	5/15/17	1410	G	Water	N	N	1	2	1	1	2	7	
~~MW-8~~ JB				Water		N							
~~MW-9~~ JB				Water		N							
MW-10	5/15/17	1205	G	Water	N	N	1	2	1	1	2	7	
MW-13	5/15/17	1320	G	Water	N	N	1	2	1	1	2	7	
~~Field Duplicate~~ JB MW-10D	5/15/17	1220	G	Water	N	N	1	2	1	1	2	7	
~~Equipment Blank~~ JB MW-13EB	5/15/17	1340	G	Water	N	N	1	2	1	1	2	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: 5/16/17 1035	Company: HDR	Received by:	Date/Time: 5/16/17 1035	Company: 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: 5.4, 4.1, 4.0, 0 IR#7 JS 5/16/17

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

Chain of Custody Record

280-97178 Chain of Custody

TestAmerica
LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie K		Lab No: 280-398802.1
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): NELAP - Oregon		Job #: 280-97178-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/14/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee Station	SSOW#:			

Preservation Codes:

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

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-97178-1)	5/15/17	14:10 Mountain		Water			X	X	X	2	
MW-10 (280-97178-2)	5/15/17	12:05 Mountain		Water			X	X	X	2	
MW-13 (280-97178-3)	5/15/17	13:20 Mountain		Water			X	X	X	2	
MW-10D (280-97178-4)	5/15/17	12:20 Mountain		Water			X	X	X	2	
MW-13EB (280-97178-5)	5/15/17	13:40 Mountain		Water			X	X	X	2	

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

Possible Hazard Identification *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: Rebecca Tune	Date/Time: 5/16/17 1515	Company TAD	Received by:	Date/Time: 5/17/17 0920	Company TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-97178-1

Login Number: 97178
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: 280-97178-1

Login Number: 97178
List Number: 3
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 05/17/17 03:24 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	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-97178-1

Login Number: 97178
List Number: 4
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 05/17/17 03:28 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	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	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 - Cherokee

TestAmerica Job ID: 280-97178-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
280-97178-1	MW-7	86.1
280-97178-2	MW-10	92.6
280-97178-3	MW-13	89.4
280-97178-4	MW-10D	95.3
280-97178-5	MW-13EB	95.9
LCS 160-309412/2-A	Lab Control Sample	99.7
LCSD 160-309412/3-A	Lab Control Sample Dup	94.4
MB 160-309412/1-A	Method Blank	93.8

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)
280-97178-1	MW-7	86.1	86.0
280-97178-2	MW-10	92.6	87.5
280-97178-3	MW-13	89.4	83.7
280-97178-4	MW-10D	95.3	81.9
280-97178-5	MW-13EB	95.9	85.2
LCS 160-309413/2-A	Lab Control Sample	99.7	84.9
LCSD 160-309413/3-A	Lab Control Sample Dup	94.4	81.9
MB 160-309413/1-A	Method Blank	93.8	83.0

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: 280-99315-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
8/16/2017 10:56:37 AM

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 - Cherokee

TestAmerica Job ID: 280-99315-1

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.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

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

Glossary

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

Job ID: 280-99315-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-99315-1

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 7/18/2017 at 12:50 PM; 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 12.2º C.

The following samples were received at the laboratory outside the required temperature criteria: MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4), MW-10EB (280-99315-5). The samples were received on ice at temperatures of 8.9 C and 12.2 C. The client was notified on 7/18/17.

TOTAL RECOVERABLE METALS
Samples MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 07/24/2017 and analyzed on 07/25/2017.

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

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/24/2017 and analyzed on 07/25/2017 and 07/26/2017.

Calcium failed the recovery criteria high for the MS and MSD of sample 240-82659-1 in batch 240-288707. 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-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) 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-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 07/24/2017.

Job ID: 280-99315-1 (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-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 07/20/2017.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-99372-1. Refer to the QC report for details.

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

CORROSIVITY (PH)
Samples MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 07/19/2017 and 08/02/2017.

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

ANIONS (28 DAYS)
Samples MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/01/2017.

Sulfate was detected in method blank MB 280-382750/6 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-7 (280-99315-1)[10X], MW-10 (280-99315-2)[10X] and MW-10D (280-99315-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)
Samples MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 07/24/2017 and analyzed on 08/15/2017.

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

RADIUM-228
Samples MW-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 07/24/2017 and analyzed on 08/03/2017.

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-7 (280-99315-1), MW-10 (280-99315-2), MW-13 (280-99315-3), MW-10D (280-99315-4) and MW-10EB (280-99315-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 08/15/2017.

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 - Cherokee

TestAmerica Job ID: 280-99315-1

Client Sample ID: MW-7 — Lab Sample ID: 280-99315-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.0		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0023	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.079		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	240		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0044		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.0040		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.0024		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.060		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.012		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0011	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	24.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	680		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	570	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2100		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-10 — Lab Sample ID: 280-99315-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	4.2		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.00090	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0076		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.059		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0036		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.0021		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.00057	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.12		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.061		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0045	J	0.0050	0.00089	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	24.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	410		30	2.5	mg/L	10		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-10 (Continued) — Lab Sample ID: 280-99315-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1300	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2600		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	28		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-99315-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.47		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.00087	J	0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.068		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	110		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00035	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.037		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0023	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0030	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	24.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	140		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	170	B	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	770		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10D — Lab Sample ID: 280-99315-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	4.2		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.00076	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0070		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.058		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0039		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.0021		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.060		0.010	0.0011	mg/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-10D (Continued)

Lab Sample ID: 280-99315-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0042	J	0.0050	0.00089	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	24.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	410		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	1400	B	50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	2500		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	27		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10EB

Lab Sample ID: 280-99315-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.012	J	0.20	0.0081	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	6.2	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-99315-1

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 - Cherokee

TestAmerica Job ID: 280-99315-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-99315-1	MW-7	Water	07/17/17 12:00	07/18/17 12:50
280-99315-2	MW-10	Water	07/18/17 11:35	07/18/17 12:50
280-99315-3	MW-13	Water	07/17/17 13:40	07/18/17 12:50
280-99315-4	MW-10D	Water	07/18/17 11:35	07/18/17 12:50
280-99315-5	MW-10EB	Water	07/18/17 12:10	07/18/17 12:50

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

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.0**		0.20	0.0081	mg/L		07/24/17 14:00	07/25/17 15:59	1

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**4.2**		0.20	0.0081	mg/L		07/24/17 14:00	07/25/17 16:03	1

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.47**		0.20	0.0081	mg/L		07/24/17 14:00	07/25/17 16:08	1

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**4.2**		0.20	0.0081	mg/L		07/24/17 14:00	07/25/17 16:13	1

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.012**	**J**	0.20	0.0081	mg/L		07/24/17 14:00	07/25/17 16:18	1

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

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/24/17 14:00	07/26/17 12:31	1
Arsenic	**0.0023**	**J**	0.0050	0.00075	mg/L		07/24/17 14:00	07/26/17 12:31	1
Barium	**0.079**		0.0050	0.0022	mg/L		07/24/17 14:00	07/26/17 12:31	1
Beryllium	ND		0.0010	0.00031	mg/L		07/24/17 14:00	07/26/17 12:31	1
Cadmium	ND		0.0010	0.00021	mg/L		07/24/17 14:00	07/26/17 12:31	1
Calcium	**240**		1.0	0.58	mg/L		07/24/17 14:00	07/26/17 12:31	1
Chromium	**0.0044**		0.0020	0.00098	mg/L		07/24/17 14:00	07/26/17 12:31	1
Cobalt	**0.0040**		0.0010	0.00019	mg/L		07/24/17 14:00	07/26/17 12:31	1
Lead	**0.0024**		0.0010	0.00045	mg/L		07/24/17 14:00	07/26/17 12:31	1
Lithium	**0.060**		0.0080	0.0017	mg/L		07/24/17 14:00	07/26/17 12:31	1
Molybdenum	**0.012**		0.010	0.0011	mg/L		07/24/17 14:00	07/26/17 12:31	1
Selenium	**0.0011**	**J**	0.0050	0.00089	mg/L		07/24/17 14:00	07/26/17 12:31	1
Thallium	ND		0.0010	0.00020	mg/L		07/24/17 14:00	07/26/17 12:31	1

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00090**	**J**	0.0020	0.00057	mg/L		07/24/17 14:00	07/25/17 19:26	1

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

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0076		0.0050	0.00075	mg/L		07/24/17 14:00	07/25/17 19:26	1
Barium	0.059		0.0050	0.0022	mg/L		07/24/17 14:00	07/25/17 19:26	1
Beryllium	ND		0.0010	0.00031	mg/L		07/24/17 14:00	07/25/17 19:26	1
Cadmium	ND		0.0010	0.00021	mg/L		07/24/17 14:00	07/25/17 19:26	1
Calcium	390		1.0	0.58	mg/L		07/24/17 14:00	07/25/17 19:26	1
Chromium	0.0036		0.0020	0.00098	mg/L		07/24/17 14:00	07/25/17 19:26	1
Cobalt	0.0021		0.0010	0.00019	mg/L		07/24/17 14:00	07/25/17 19:26	1
Lead	0.00057	J	0.0010	0.00045	mg/L		07/24/17 14:00	07/25/17 19:26	1
Lithium	0.12		0.0080	0.0017	mg/L		07/24/17 14:00	07/25/17 19:26	1
Molybdenum	0.061		0.010	0.0011	mg/L		07/24/17 14:00	07/25/17 19:26	1
Selenium	0.0045	J	0.0050	0.00089	mg/L		07/24/17 14:00	07/25/17 19:26	1
Thallium	ND		0.0010	0.00020	mg/L		07/24/17 14:00	07/25/17 19:26	1

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/24/17 14:00	07/25/17 19:30	1
Arsenic	0.00087	J	0.0050	0.00075	mg/L		07/24/17 14:00	07/25/17 19:30	1
Barium	0.068		0.0050	0.0022	mg/L		07/24/17 14:00	07/25/17 19:30	1
Beryllium	ND		0.0010	0.00031	mg/L		07/24/17 14:00	07/25/17 19:30	1
Cadmium	ND		0.0010	0.00021	mg/L		07/24/17 14:00	07/25/17 19:30	1
Calcium	110		1.0	0.58	mg/L		07/24/17 14:00	07/25/17 19:30	1
Chromium	0.0017	J	0.0020	0.00098	mg/L		07/24/17 14:00	07/25/17 19:30	1
Cobalt	0.00035	J	0.0010	0.00019	mg/L		07/24/17 14:00	07/25/17 19:30	1
Lead	ND		0.0010	0.00045	mg/L		07/24/17 14:00	07/25/17 19:30	1
Lithium	0.037		0.0080	0.0017	mg/L		07/24/17 14:00	07/25/17 19:30	1
Molybdenum	0.0023	J	0.010	0.0011	mg/L		07/24/17 14:00	07/25/17 19:30	1
Selenium	0.0030	J	0.0050	0.00089	mg/L		07/24/17 14:00	07/25/17 19:30	1
Thallium	ND		0.0010	0.00020	mg/L		07/24/17 14:00	07/25/17 19:30	1

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00076	J	0.0020	0.00057	mg/L		07/24/17 14:00	07/25/17 19:42	1
Arsenic	0.0070		0.0050	0.00075	mg/L		07/24/17 14:00	07/25/17 19:42	1
Barium	0.058		0.0050	0.0022	mg/L		07/24/17 14:00	07/25/17 19:42	1
Beryllium	ND		0.0010	0.00031	mg/L		07/24/17 14:00	07/25/17 19:42	1
Cadmium	ND		0.0010	0.00021	mg/L		07/24/17 14:00	07/25/17 19:42	1
Calcium	390		1.0	0.58	mg/L		07/24/17 14:00	07/25/17 19:42	1
Chromium	0.0039		0.0020	0.00098	mg/L		07/24/17 14:00	07/25/17 19:42	1
Cobalt	0.0021		0.0010	0.00019	mg/L		07/24/17 14:00	07/25/17 19:42	1
Lead	ND		0.0010	0.00045	mg/L		07/24/17 14:00	07/25/17 19:42	1
Lithium	0.11		0.0080	0.0017	mg/L		07/24/17 14:00	07/25/17 19:42	1
Molybdenum	0.060		0.010	0.0011	mg/L		07/24/17 14:00	07/25/17 19:42	1
Selenium	0.0042	J	0.0050	0.00089	mg/L		07/24/17 14:00	07/25/17 19:42	1
Thallium	ND		0.0010	0.00020	mg/L		07/24/17 14:00	07/25/17 19:42	1

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

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/24/17 14:00	07/25/17 19:46	1
Arsenic	ND		0.0050	0.00075	mg/L		07/24/17 14:00	07/25/17 19:46	1
Barium	ND		0.0050	0.0022	mg/L		07/24/17 14:00	07/25/17 19:46	1
Beryllium	ND		0.0010	0.00031	mg/L		07/24/17 14:00	07/25/17 19:46	1
Cadmium	ND		0.0010	0.00021	mg/L		07/24/17 14:00	07/25/17 19:46	1
Calcium	ND		1.0	0.58	mg/L		07/24/17 14:00	07/25/17 19:46	1
Chromium	ND		0.0020	0.00098	mg/L		07/24/17 14:00	07/25/17 19:46	1
Cobalt	ND		0.0010	0.00019	mg/L		07/24/17 14:00	07/25/17 19:46	1
Lead	ND		0.0010	0.00045	mg/L		07/24/17 14:00	07/25/17 19:46	1
Lithium	ND		0.0080	0.0017	mg/L		07/24/17 14:00	07/25/17 19:46	1
Molybdenum	ND		0.010	0.0011	mg/L		07/24/17 14:00	07/25/17 19:46	1
Selenium	ND		0.0050	0.00089	mg/L		07/24/17 14:00	07/25/17 19:46	1
Thallium	ND		0.0010	0.00020	mg/L		07/24/17 14:00	07/25/17 19:46	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

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 16:06	1

Client Sample ID: MW-10
Date Collected: 07/17/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

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 16:09	1

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

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 16:11	1

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

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 16:13	1

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

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 16:15	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			07/19/17 17:56	1
Temperature	24.4	HF	1.0	1.0	Degrees C			07/19/17 17:56	1
Chloride	680		30	2.5	mg/L			08/01/17 12:41	10
Fluoride	1.3		0.50	0.060	mg/L			08/01/17 10:46	1
Sulfate	570	B	50	2.3	mg/L			08/01/17 12:41	10
Total Dissolved Solids (TDS)	2100		40	19	mg/L			07/24/17 08:10	1
Total Suspended Solids	17		4.0	1.1	mg/L			07/20/17 18:20	1

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

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			07/19/17 17:51	1
Temperature	24.4	HF	1.0	1.0	Degrees C			07/19/17 17:51	1
Chloride	410		30	2.5	mg/L			08/01/17 12:58	10
Fluoride	2.5		0.50	0.060	mg/L			08/01/17 11:03	1
Sulfate	1300	B	50	2.3	mg/L			08/01/17 12:58	10
Total Dissolved Solids (TDS)	2600		20	9.4	mg/L			07/24/17 08:10	1
Total Suspended Solids	28		4.0	1.1	mg/L			07/20/17 18:20	1

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			07/19/17 18:01	1
Temperature	24.2	HF	1.0	1.0	Degrees C			07/19/17 18:01	1
Chloride	140		3.0	0.25	mg/L			08/01/17 11:20	1
Fluoride	1.2		0.50	0.060	mg/L			08/01/17 11:20	1
Sulfate	170	B	5.0	0.23	mg/L			08/01/17 11:20	1
Total Dissolved Solids (TDS)	770		20	9.4	mg/L			07/24/17 08:10	1
Total Suspended Solids	6.4		4.0	1.1	mg/L			07/20/17 18:20	1

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

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			07/19/17 18:27	1
Temperature	24.4	HF	1.0	1.0	Degrees C			07/19/17 18:27	1
Chloride	410		30	2.5	mg/L			08/01/17 13:14	10
Fluoride	2.5		0.50	0.060	mg/L			08/01/17 11:37	1
Sulfate	1400	B	50	2.3	mg/L			08/01/17 13:14	10
Total Dissolved Solids (TDS)	2500		20	9.4	mg/L			07/24/17 08:10	1
Total Suspended Solids	27		4.0	1.1	mg/L			07/20/17 18:20	1

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

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			08/02/17 14:32	1
Temperature	22.4	HF	1.0	1.0	Degrees C			08/02/17 14:32	1

General Chemistry (Continued)

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/01/17 11:53	1
Fluoride	ND		0.50	0.060	mg/L			08/01/17 11:53	1
Sulfate	ND		5.0	0.23	mg/L			08/01/17 11:53	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			07/24/17 08:10	1
Total Suspended Solids	**1.2**	**J**	4.0	1.1	mg/L			07/20/17 18:20	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.364**		0.102	0.107	1.00	0.0725	pCi/L	07/24/17 10:50	08/15/17 06:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*07/24/17 10:50*	*08/15/17 06:41*	*1*

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.147**		0.0743	0.0755	1.00	0.0899	pCi/L	07/24/17 10:50	08/15/17 06:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/24/17 10:50*	*08/15/17 06:41*	*1*

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.272**		0.0925	0.0957	1.00	0.0842	pCi/L	07/24/17 10:50	08/15/17 06:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*07/24/17 10:50*	*08/15/17 06:41*	*1*

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.155**		0.0748	0.0761	1.00	0.0863	pCi/L	07/24/17 10:50	08/15/17 06:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*07/24/17 10:50*	*08/15/17 06:41*	*1*

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0276	U	0.0508	0.0509	1.00	0.0907	pCi/L	07/24/17 10:50	08/15/17 06:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*07/24/17 10:50*	*08/15/17 06:41*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.31**		0.276	0.301	1.00	0.295	pCi/L	07/24/17 12:10	08/03/17 09:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*
Y Carrier	*91.6*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.947**		0.226	0.242	1.00	0.251	pCi/L	07/24/17 12:10	08/03/17 09:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*
Y Carrier	*95.8*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.330**		0.186	0.189	1.00	0.277	pCi/L	07/24/17 12:10	08/03/17 09:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.1*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*
Y Carrier	*97.7*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.11		0.261	0.280	1.00	0.304	pCi/L	07/24/17 12:10	08/03/17 09:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*
Y Carrier	*94.5*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0532	U	0.149	0.149	1.00	0.283	pCi/L	07/24/17 12:10	08/03/17 09:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.1*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*
Y Carrier	*93.2*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:24*	*1*

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

Client Sample ID: MW-7
Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.68		0.294	0.319	5.00	0.295	pCi/L		08/15/17 14:52	1

Client Sample ID: MW-10
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.09		0.238	0.253	5.00	0.251	pCi/L		08/15/17 14:52	1

Client Sample ID: MW-13
Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.603		0.208	0.211	5.00	0.277	pCi/L		08/15/17 14:52	1

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

TestAmerica Job ID: 280-99315-1

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

Client Sample ID: MW-10D
Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.26**		0.272	0.290	5.00	0.304	pCi/L		08/15/17 14:52	1

Client Sample ID: MW-10EB
Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0256	U	0.157	0.157	5.00	0.283	pCi/L		08/15/17 14:52	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-288420/1-A
Matrix: Water
Analysis Batch: 288623

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 288420

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		07/24/17 14:00	07/25/17 13:33	1

Lab Sample ID: LCS 240-288420/2-A
Matrix: Water
Analysis Batch: 288623

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 288420

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.01		mg/L		101	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-288420/1-A
Matrix: Water
Analysis Batch: 288707

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 288420

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/24/17 14:00	07/25/17 18:54	1
Arsenic	ND		0.0050	0.00075	mg/L		07/24/17 14:00	07/25/17 18:54	1
Barium	ND		0.0050	0.0022	mg/L		07/24/17 14:00	07/25/17 18:54	1
Beryllium	ND		0.0010	0.00031	mg/L		07/24/17 14:00	07/25/17 18:54	1
Cadmium	ND		0.0010	0.00021	mg/L		07/24/17 14:00	07/25/17 18:54	1
Calcium	ND		1.0	0.58	mg/L		07/24/17 14:00	07/25/17 18:54	1
Chromium	ND		0.0020	0.00098	mg/L		07/24/17 14:00	07/25/17 18:54	1
Cobalt	ND		0.0010	0.00019	mg/L		07/24/17 14:00	07/25/17 18:54	1
Lead	ND		0.0010	0.00045	mg/L		07/24/17 14:00	07/25/17 18:54	1
Lithium	ND		0.0080	0.0017	mg/L		07/24/17 14:00	07/25/17 18:54	1
Molybdenum	ND		0.010	0.0011	mg/L		07/24/17 14:00	07/25/17 18:54	1
Selenium	ND		0.0050	0.00089	mg/L		07/24/17 14:00	07/25/17 18:54	1
Thallium	ND		0.0010	0.00020	mg/L		07/24/17 14:00	07/25/17 18:54	1

Lab Sample ID: LCS 240-288420/3-A
Matrix: Water
Analysis Batch: 288707

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 288420

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	1.00		mg/L		100	80 - 120
Barium	1.00	1.05		mg/L		105	80 - 120
Beryllium	1.00	1.06		mg/L		106	80 - 120
Cadmium	1.00	1.04		mg/L		104	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Cobalt	1.00	1.00		mg/L		100	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Lithium	0.100	0.103		mg/L		103	80 - 120
Molybdenum	0.100	0.0948		mg/L		95	80 - 120
Selenium	1.00	1.00		mg/L		100	80 - 120
Thallium	0.250	0.246		mg/L		99	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-381747/1-A
Matrix: Water
Analysis Batch: 381886

Client Sample ID: Method Blank
Prep Type: Total/NA
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
Matrix: Water
Analysis Batch: 381886

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
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
Matrix: Water
Analysis Batch: 381886

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
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 280-381394/29
Matrix: Water
Analysis Batch: 381394

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

Lab Sample ID: LCS 280-381394/4
Matrix: Water
Analysis Batch: 381394

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Lab Sample ID: 280-99315-4 DU
Matrix: Water
Analysis Batch: 381394

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	8.5	HF	8.6		SU		2	5
Temperature	24.4	HF	24.6		Degrees C		0.6	10

Lab Sample ID: LCS 280-383027/4
Matrix: Water
Analysis Batch: 383027

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-382750/6
Matrix: Water
Analysis Batch: 382750

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			08/01/17 10:20	1
Fluoride	ND		0.50	0.060	mg/L			08/01/17 10:20	1
Sulfate	0.416	J	5.0	0.23	mg/L			08/01/17 10:20	1

Lab Sample ID: LCS 280-382750/4
Matrix: Water
Analysis Batch: 382750

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	103		mg/L		103	90 - 110
Fluoride	5.00	5.27		mg/L		105	90 - 110
Sulfate	100	104		mg/L		104	90 - 110

Lab Sample ID: LCSD 280-382750/5
Matrix: Water
Analysis Batch: 382750

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	103		mg/L		103	90 - 110	0	10
Fluoride	5.00	5.27		mg/L		105	90 - 110	0	10
Sulfate	100	104		mg/L		104	90 - 110	0	10

Lab Sample ID: MRL 280-382750/3
Matrix: Water
Analysis Batch: 382750

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.61	J	mg/L		105	50 - 150
Fluoride	0.200	0.189	J	mg/L		94	50 - 150
Sulfate	2.50	2.82	J	mg/L		113	50 - 150

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

Lab Sample ID: MB 280-381723/1
Matrix: Water
Analysis Batch: 381723

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			07/24/17 08:10	1

Lab Sample ID: LCS 280-381723/2
Matrix: Water
Analysis Batch: 381723

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	484		mg/L		97	86 - 110

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

Lab Sample ID: MB 280-381513/2
Matrix: Water
Analysis Batch: 381513

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			07/20/17 18:20	1

Lab Sample ID: LCS 280-381513/1
Matrix: Water
Analysis Batch: 381513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	101		mg/L		101	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-318910/1-A
Matrix: Water
Analysis Batch: 322165

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 318910

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.003265	U	0.0361	0.0361	1.00	0.0770	pCi/L	07/24/17 10:50	08/15/17 06:38	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*07/24/17 10:50*	*08/15/17 06:38*	*1*

Lab Sample ID: LCS 160-318910/2-A
Matrix: Water
Analysis Batch: 322165

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 318910

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	9.000		0.940	1.00	0.0869	pCi/L	79	68 - 137

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

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-318919/1-A
Matrix: Water
Analysis Batch: 320545

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 318919

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1909	U	0.187	0.188	1.00	0.303	pCi/L	07/24/17 12:10	08/03/17 09:23	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:23*	*1*
Y Carrier	*92.9*		*40 - 110*	*07/24/17 12:10*	*08/03/17 09:23*	*1*

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

Lab Sample ID: LCS 160-318919/2-A
Matrix: Water
Analysis Batch: 320545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 318919

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			13.1	13.98		1.47	1.00	0.265	pCi/L	107	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*93.6*		*40 - 110*

Metals

Prep Batch: 288420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total Recoverable	Water	3005A	
280-99315-2	MW-10	Total Recoverable	Water	3005A	
280-99315-3	MW-13	Total Recoverable	Water	3005A	
280-99315-4	MW-10D	Total Recoverable	Water	3005A	
280-99315-5	MW-10EB	Total Recoverable	Water	3005A	
MB 240-288420/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-288420/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-288420/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 288623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total Recoverable	Water	6010C	288420
280-99315-2	MW-10	Total Recoverable	Water	6010C	288420
280-99315-3	MW-13	Total Recoverable	Water	6010C	288420
280-99315-4	MW-10D	Total Recoverable	Water	6010C	288420
280-99315-5	MW-10EB	Total Recoverable	Water	6010C	288420
MB 240-288420/1-A	Method Blank	Total Recoverable	Water	6010C	288420
LCS 240-288420/2-A	Lab Control Sample	Total Recoverable	Water	6010C	288420

Analysis Batch: 288707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-2	MW-10	Total Recoverable	Water	6020A	288420
280-99315-3	MW-13	Total Recoverable	Water	6020A	288420
280-99315-4	MW-10D	Total Recoverable	Water	6020A	288420
280-99315-5	MW-10EB	Total Recoverable	Water	6020A	288420
MB 240-288420/1-A	Method Blank	Total Recoverable	Water	6020A	288420
LCS 240-288420/3-A	Lab Control Sample	Total Recoverable	Water	6020A	288420

Analysis Batch: 288778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total Recoverable	Water	6020A	288420

Prep Batch: 381747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	7470A	
280-99315-2	MW-10	Total/NA	Water	7470A	
280-99315-3	MW-13	Total/NA	Water	7470A	
280-99315-4	MW-10D	Total/NA	Water	7470A	
280-99315-5	MW-10EB	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
280-99315-1	MW-7	Total/NA	Water	7470A	381747
280-99315-2	MW-10	Total/NA	Water	7470A	381747
280-99315-3	MW-13	Total/NA	Water	7470A	381747
280-99315-4	MW-10D	Total/NA	Water	7470A	381747
280-99315-5	MW-10EB	Total/NA	Water	7470A	381747
MB 280-381747/1-A	Method Blank	Total/NA	Water	7470A	381747

Metals (Continued)

Analysis Batch: 381886 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
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: 381394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	9040B	
280-99315-2	MW-10	Total/NA	Water	9040B	
280-99315-3	MW-13	Total/NA	Water	9040B	
280-99315-4	MW-10D	Total/NA	Water	9040B	
LCS 280-381394/29	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-381394/4	Lab Control Sample	Total/NA	Water	9040B	
280-99315-4 DU	MW-10D	Total/NA	Water	9040B	

Analysis Batch: 381513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	SM 2540D	
280-99315-2	MW-10	Total/NA	Water	SM 2540D	
280-99315-3	MW-13	Total/NA	Water	SM 2540D	
280-99315-4	MW-10D	Total/NA	Water	SM 2540D	
280-99315-5	MW-10EB	Total/NA	Water	SM 2540D	
MB 280-381513/2	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-381513/1	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 381723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	SM 2540C	
280-99315-2	MW-10	Total/NA	Water	SM 2540C	
280-99315-3	MW-13	Total/NA	Water	SM 2540C	
280-99315-4	MW-10D	Total/NA	Water	SM 2540C	
280-99315-5	MW-10EB	Total/NA	Water	SM 2540C	
MB 280-381723/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-381723/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 382750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	9056A	
280-99315-1	MW-7	Total/NA	Water	9056A	
280-99315-2	MW-10	Total/NA	Water	9056A	
280-99315-2	MW-10	Total/NA	Water	9056A	
280-99315-3	MW-13	Total/NA	Water	9056A	
280-99315-4	MW-10D	Total/NA	Water	9056A	
280-99315-4	MW-10D	Total/NA	Water	9056A	
280-99315-5	MW-10EB	Total/NA	Water	9056A	
MB 280-382750/6	Method Blank	Total/NA	Water	9056A	
LCS 280-382750/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-382750/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-382750/3	Lab Control Sample	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 383027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-5	MW-10EB	Total/NA	Water	9040B	
LCS 280-383027/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 318910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	PrecSep-21	
280-99315-2	MW-10	Total/NA	Water	PrecSep-21	
280-99315-3	MW-13	Total/NA	Water	PrecSep-21	
280-99315-4	MW-10D	Total/NA	Water	PrecSep-21	
280-99315-5	MW-10EB	Total/NA	Water	PrecSep-21	
MB 160-318910/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-318910/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 318919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-99315-1	MW-7	Total/NA	Water	PrecSep_0	
280-99315-2	MW-10	Total/NA	Water	PrecSep_0	
280-99315-3	MW-13	Total/NA	Water	PrecSep_0	
280-99315-4	MW-10D	Total/NA	Water	PrecSep_0	
280-99315-5	MW-10EB	Total/NA	Water	PrecSep_0	
MB 160-318919/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-318919/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-99315-1

Client Sample ID: MW-7

Date Collected: 07/17/17 12:00
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-1

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	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288623	07/25/17 15:59	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288778	07/26/17 12:31	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 16:06	CDH	TAL DEN
Total/NA	Analysis	9040B		1			381394	07/19/17 17:56	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	382750	08/01/17 10:46	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	382750	08/01/17 12:41	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	381723	07/24/17 08:10	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381513	07/20/17 18:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.57 mL	1.0 g	318910	07/24/17 10:50	LDE	TAL SL
Total/NA	Analysis	9315		1			322166	08/15/17 06:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.57 mL	1.0 g	318919	07/24/17 12:10	LDE	TAL SL
Total/NA	Analysis	9320		1			320545	08/03/17 09:24	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			322313	08/15/17 14:52	RTM	TAL SL

Client Sample ID: MW-10

Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-2

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	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288623	07/25/17 16:03	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288707	07/25/17 19:26	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 16:09	CDH	TAL DEN
Total/NA	Analysis	9040B		1			381394	07/19/17 17:51	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	382750	08/01/17 11:03	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	382750	08/01/17 12:58	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	381723	07/24/17 08:10	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381513	07/20/17 18:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.08 mL	1.0 g	318910	07/24/17 10:50	LDE	TAL SL
Total/NA	Analysis	9315		1			322166	08/15/17 06:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.08 mL	1.0 g	318919	07/24/17 12:10	LDE	TAL SL
Total/NA	Analysis	9320		1			320545	08/03/17 09:24	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			322313	08/15/17 14:52	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-99315-1

Client Sample ID: MW-13

Date Collected: 07/17/17 13:40
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-3
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	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288623	07/25/17 16:08	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288707	07/25/17 19:30	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 16:11	CDH	TAL DEN
Total/NA	Analysis	9040B		1			381394	07/19/17 18:01	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	382750	08/01/17 11:20	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	381723	07/24/17 08:10	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381513	07/20/17 18:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.93 mL	1.0 g	318910	07/24/17 10:50	LDE	TAL SL
Total/NA	Analysis	9315		1			322166	08/15/17 06:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.93 mL	1.0 g	318919	07/24/17 12:10	LDE	TAL SL
Total/NA	Analysis	9320		1			320545	08/03/17 09:24	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			322313	08/15/17 14:52	RTM	TAL SL

Client Sample ID: MW-10D

Date Collected: 07/18/17 11:35
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-4
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	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288623	07/25/17 16:13	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288707	07/25/17 19:42	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 16:13	CDH	TAL DEN
Total/NA	Analysis	9040B		1			381394	07/19/17 18:27	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	382750	08/01/17 11:37	AFB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	382750	08/01/17 13:14	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	381723	07/24/17 08:10	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381513	07/20/17 18:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.08 mL	1.0 g	318910	07/24/17 10:50	LDE	TAL SL
Total/NA	Analysis	9315		1			322166	08/15/17 06:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.08 mL	1.0 g	318919	07/24/17 12:10	LDE	TAL SL
Total/NA	Analysis	9320		1			320545	08/03/17 09:24	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			322313	08/15/17 14:52	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-99315-1

Client Sample ID: MW-10EB

Date Collected: 07/18/17 12:10
Date Received: 07/18/17 12:50

Lab Sample ID: 280-99315-5

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	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			288623	07/25/17 16:18	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	288420	07/24/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			288707	07/25/17 19:46	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 16:15	CDH	TAL DEN
Total/NA	Analysis	9040B		1			383027	08/02/17 14:32	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	382750	08/01/17 11:53	AFB	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	381723	07/24/17 08:10	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	381513	07/20/17 18:20	SVC	TAL DEN
Total/NA	Prep	PrecSep-21			1000.43 mL	1.0 g	318910	07/24/17 10:50	LDE	TAL SL
Total/NA	Analysis	9315		1			322166	08/15/17 06:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.43 mL	1.0 g	318919	07/24/17 12:10	LDE	TAL SL
Total/NA	Analysis	9320		1			320545	08/03/17 09:24	ALD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			322313	08/15/17 14:52	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 - Cherokee

TestAmerica Job ID: 280-99315-1

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
Oregon	NELAP	10	4025	01-08-18

The following analytes are included in this report, but are not accredited/certified under this accreditation/certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

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
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-99315-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New 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: Justin Bills	Lab PM: Rothmeyer, Stephanie K	Carrier Tracking No(s):	COC No: 001
Client Contact: Anna Lundin	Phone: 518-331-7027	E-Mail: stephanie.rothmeyer@testamericainc.com		Page: Page 1 of 1
Company: HDR Inc				Job #:

Address: 9781 S. Meridian Blve Suite 400	Due Date Requested:	
City: Englewood	TAT Requested (days): Standard	
State, Zip: CO, 80112		
Phone: 720-633-2380(Tel)	PO #: DEN-001	
Email: anna.lundin@hdrinc.com	WO #:	
Project Name: Xcel Energy GW CCR Monitoring - Cherokee	Project #: 28014371	
Site: Colorado	SSOW#:	

280-99315 Chain of Custody

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=solic, 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-7	7/17/17	1200	G	Water		N	1	2	1	1	2	7	
~~MW-8~~ SB				~~Water~~		N	1	~~2~~					
~~MW-9~~ SB				Water		N							
MW-10	7/18/17	1135	G	Water		N	1	2	1	1	2	7	
MW-13	7/17/17	1340	G	Water		N	1	2	1	1	2	7	
~~Field Duplicate~~ MW-10D	7/18/17	1135	G	Water		N	1	2	1	1	2	7	
~~Equipment Blank~~ MW-10EB	7/18/17	1210	G	Water		N	1	2	1	1	2	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:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	7/18/17 1250	HDR		7/18/17 1250	TAD
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Cooler Temperature(s) °C and Other Remarks: 8.9, 12.2 +0.0 IR#7 transfered by JS 7/18/17

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

Chain of Custody Record

280-99315 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rothmeyer, Stephanie		C No: 0-406278.1
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): NELAP - Oregon		Job #: 280-99315-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 8/16/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee Station	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-99315-1)	7/17/17	12:00 Mountain		Water			X	X	X	2	
MW-10 (280-99315-2)	7/18/17	11:35 Mountain		Water			X	X	X	2	
MW-13 (280-99315-3)	7/17/17	13:40 Mountain		Water			X	X	X	2	
MW-10D (280-99315-4)	7/18/17	11:35 Mountain		Water			X	X	X	2	
MW-10EB (280-99315-5)	7/18/17	12:10 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
Rakonda Mue	7/19/17 1416	TAD	[signature]	7/20/17 0830	TASTL

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

23.8/23.8

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: 280-406279.1
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): NELAP - Oregon		Job #: 280-99315-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 8/11/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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)	6010C/3005A (MOD) Boron	6020A/3005A (MOD) 13 Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:							S61
MW-7 (280-99315-1)	7/17/17	12:00 Mountain		Water			X	X	1	, Use Collision Cell
MW-10 (280-99315-2)	7/18/17	11:35 Mountain		Water			X	X	1	Use Collision Cell
MW-13 (280-99315-3)	7/17/17	13:40 Mountain		Water			X	X	1	, Use Collision Cell
MW-10D (280-99315-4)	7/18/17	11:35 Mountain		Water			X	X	1	Use Collision Cell
MW-10EB (280-99315-5)	7/18/17	12:10 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]	7/19/17 1420	TAL	[signature]	7/21/17 920	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:

8/16/2017

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

Client TA Denver Site Name _____ Cooler unpacked by: [signature]

Cooler Received on 7/21/17 Opened on 7/21/17

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 **-0.4** °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

IR GUN #36 (CF **+0**°C) Observed Cooler Temp. 23.8 °C Corrected Cooler Temp. 23.8 °C

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity _____	(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 dji

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-99315-1

Login Number: 99315
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.	False	Refer to Job Narrative for details.
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: 280-99315-1

Login Number: 99315
List Number: 2
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 07/20/17 04:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.7
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 - Cherokee

TestAmerica Job ID: 280-99315-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
280-99315-1	MW-7	96.2
280-99315-2	MW-10	101
280-99315-3	MW-13	99.1
280-99315-4	MW-10D	99.7
280-99315-5	MW-10EB	97.1
LCS 160-318910/2-A	Lab Control Sample	102
MB 160-318910/1-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)
280-99315-1	MW-7	96.2	91.6
280-99315-2	MW-10	101	95.8
280-99315-3	MW-13	99.1	97.7
280-99315-4	MW-10D	99.7	94.5
280-99315-5	MW-10EB	97.1	93.2
LCS 160-318919/2-A	Lab Control Sample	102	93.6
MB 160-318919/1-A	Method Blank	99.4	92.9

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: 280-100916-1
Client Project/Site: Xcel Energy GW CCR Monitoring - Cherokee
Revision: 1

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

Attn: Molly Reeves

Stephanie Rothmeyer

Authorized for release by:
10/16/2017 10:02:57 AM

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 - Cherokee

TestAmerica Job ID: 280-100916-1

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.

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

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

Job ID: 280-100916-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Cherokee

Report Number: 280-100916-1

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 exclude B-flags that were erroneously applied to the metals data.

RECEIPT
The samples were received on 9/7/2017 at 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.9º C and 2.7º C.

The laboratory received one 1-L Nitric preserved plastic container, one 1-L unpreserved plastic container, one 500ml Nitric preserved container (filled with approximately 100-150ml of sample volume), and one 250ml unpreserved plastic container for the following sample: MW-7 (280-100916-1). There is limited, but sufficient volume to perform all requested analyses. The client was notified on 9/7/17.

The laboratory received one 1-L Nitric preserved plastic container (filled with approximately 800ml of sample volume), one 1-L unpreserved plastic container, one 500ml Nitric preserved container for the following sample: MW-9 (280-100916-2). There is limited, but sufficient volume to perform all requested analyses, except 9315_Ra226, 9320_Ra228, and Ra226Ra228_GFPC as the analyses require a full 1-L Nitric preserved plastic container. Per client request on 9/8/17, 9315_Ra226, 9320_Ra228, and Ra226Ra228_GFPC were logged for analysis using the limited volume. The client was notified on 9/7/17.

Per client request on 9/8/17, the laboratory was instructed to proceed with 9315_Ra226, 9320_Ra228, and Ra226Ra228_GFPC analysis with limited volume.

TOTAL RECOVERABLE METALS
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/11/2017 and analyzed on 09/12/2017.

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

TOTAL RECOVERABLE METALS (ICPMS)
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/11/2017 and analyzed on 09/12/2017 and 09/13/2017.

Calcium failed the recovery criteria low for the MSD of sample 240-84698-3 in batch 240-294606. 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: 280-100916-1 (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-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 09/12/2017.

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

TOTAL DISSOLVED SOLIDS
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 09/08/2017.

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

TOTAL SUSPENDED SOLIDS
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 09/11/2017.

The following sample was diluted due to slow filtration and high suspended solids: MW-7 (280-100916-1). Elevated reporting limits (RLs) are provided.

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

CORROSIVITY (PH)
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/08/2017.

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

ANIONS (28 DAYS)
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/14/2017 and 09/15/2017.

Chloride, Fluoride and Sulfate failed the recovery criteria high for the MS and MSD of sample 280-101116-1 in batch 280-387635. Refer to the QC report for details.

Samples MW-7 (280-100916-1)[5X], MW-9 (280-100916-2)[10X], MW-10 (280-100916-3)[5X] and MW-10D (280-100916-5)[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.

RADIUM-226 (GFPC)
Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 09/13/2017 and analyzed on 10/05/2017.

Radium-226 exceeded the RPD limit for the duplicate of sample 400-142993-1. Refer to the QC report for details.

The following sample was reduced due to limited volume: MW-9 (280-100916-2).

Job ID: 280-100916-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following sample was reduced due to heavy amounts of sediment making sample murky and brown: MW-7 (280-100916-1).

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

RADIUM-228

Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 09/13/2017 and analyzed on 09/19/2017.

The following sample was reduced due to limited volume: MW-9 (280-100916-2).

The following sample was reduced due to heavy amounts of sediment making sample murky and brown: MW-7 (280-100916-1).

The detection goal was not met for the following sample due to insufficient sample available for analysis: MW-7 (280-100916-1). Analytical results are reported with the detection limit achieved.

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

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-7 (280-100916-1), MW-9 (280-100916-2), MW-10 (280-100916-3), MW-13 (280-100916-4), MW-10D (280-100916-5) and MW-13EB (280-100916-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 10/05/2017.

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 - Cherokee

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-7 — Lab Sample ID: 280-100916-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.0		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0095		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.20		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.0018		0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.00064	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Calcium	270		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.046		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.013		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lead	0.032		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0092	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0044	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.00056	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Mercury	0.000068	J	0.00020	0.000027	mg/L	1		7470A	Total/NA
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	600		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	1.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	570		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2200		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	760		20	5.5	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 280-100916-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2.2		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0022		0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0066		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.12		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Beryllium	0.00031	J	0.0010	0.00031	mg/L	1		6020A	Total Recoverable
Cadmium	0.0016		0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Calcium	260		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.018		0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.0049		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 - Cherokee

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-9 (Continued) — Lab Sample ID: 280-100916-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.012		0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.039		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.016		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	370		30	2.5	mg/L	10		9056A	Total/NA
Fluoride	3.3		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	830		50	2.3	mg/L	10		9056A	Total/NA
Total Dissolved Solids (TDS)	1900		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	140		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 280-100916-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.5		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0015	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0072		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.044		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	250		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0014	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00043	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.033		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.031		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0084		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	10.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	260		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	660		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	6.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 280-100916-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.62		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Arsenic	0.0012	J	0.0050	0.00075	mg/L	1		6020A	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 - Cherokee

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-13 (Continued) — Lab Sample ID: 280-100916-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.083		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	130		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0012	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00029	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0022	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0084		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	180		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	1.2		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	190		5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	960		10	4.7	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-10D — Lab Sample ID: 280-100916-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.5		0.20	0.0081	mg/L	1		6010C	Total Recoverable
Antimony	0.0016	J	0.0020	0.00057	mg/L	1		6020A	Total Recoverable
Arsenic	0.0074		0.0050	0.00075	mg/L	1		6020A	Total Recoverable
Barium	0.060		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	270		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	0.0017	J	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Cobalt	0.00055	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.034		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.031		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0086		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	10.9	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	260		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	2.5		0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	660		25	1.2	mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	27		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-13EB — Lab Sample ID: 280-100916-6

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-13EB (Continued)

Lab Sample ID: 280-100916-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	5.9	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

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

TestAmerica Job ID: 280-100916-1

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 - Cherokee

TestAmerica Job ID: 280-100916-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-100916-1	MW-7	Water	09/07/17 09:40	09/07/17 10:45
280-100916-2	MW-9	Water	09/06/17 13:00	09/07/17 10:45
280-100916-3	MW-10	Water	09/06/17 14:45	09/07/17 10:45
280-100916-4	MW-13	Water	09/06/17 10:15	09/07/17 10:45
280-100916-5	MW-10D	Water	09/06/17 15:00	09/07/17 10:45
280-100916-6	MW-13EB	Water	09/06/17 10:30	09/07/17 10:45

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

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.0**		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 16:56	1

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.2**		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 17:10	1

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.5**		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 17:15	1

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.62**		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 17:20	1

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.5**		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 17:25	1

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 17:30	1

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

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 22:12	1
Arsenic	**0.0095**		0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 22:12	1
Barium	**0.20**		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 22:12	1
Beryllium	**0.0018**		0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 22:12	1
Cadmium	**0.00064**	**J**	0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 22:12	1
Calcium	**270**		1.0	0.58	mg/L		09/11/17 14:00	09/12/17 22:12	1
Chromium	**0.046**		0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 22:12	1
Cobalt	**0.013**		0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 22:12	1
Lead	**0.032**		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 22:12	1
Lithium	**0.11**		0.0080	0.0017	mg/L		09/11/17 14:00	09/12/17 22:12	1
Molybdenum	**0.0092**	**J**	0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 22:12	1
Selenium	**0.0044**	**J**	0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 22:12	1
Thallium	**0.00056**	**J**	0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 22:12	1

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0022**		0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 22:17	1
Arsenic	**0.0066**		0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 22:17	1
Barium	**0.12**		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 22:17	1
Beryllium	**0.00031**	**J**	0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 22:17	1
Cadmium	**0.0016**		0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 22:17	1
Calcium	**260**		1.0	0.58	mg/L		09/11/17 14:00	09/12/17 22:17	1
Chromium	**0.018**		0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 22:17	1
Cobalt	**0.0049**		0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 22:17	1
Lead	**0.012**		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 22:17	1
Lithium	**0.11**		0.0080	0.0017	mg/L		09/11/17 14:00	09/12/17 22:17	1
Molybdenum	**0.039**		0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 22:17	1
Selenium	**0.016**		0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 22:17	1
Thallium	ND		0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 22:17	1

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0015**	**J**	0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 22:21	1
Arsenic	**0.0072**		0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 22:21	1
Barium	**0.044**		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 22:21	1
Beryllium	ND		0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 22:21	1
Cadmium	ND		0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 22:21	1
Calcium	**250**		1.0	0.58	mg/L		09/11/17 14:00	09/12/17 22:21	1
Chromium	**0.0014**	**J**	0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 22:21	1
Cobalt	**0.00043**	**J**	0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 22:21	1
Lead	ND		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 22:21	1
Lithium	**0.033**		0.0080	0.0017	mg/L		09/11/17 14:00	09/12/17 22:21	1
Molybdenum	**0.031**		0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 22:21	1
Selenium	**0.0084**		0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 22:21	1
Thallium	ND		0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 22:21	1

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 22:35	1
Arsenic	**0.0012**	**J**	0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 22:35	1
Barium	**0.083**		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 22:35	1
Beryllium	ND		0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 22:35	1
Cadmium	ND		0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 22:35	1
Calcium	**130**		1.0	0.58	mg/L		09/11/17 14:00	09/13/17 20:31	1
Chromium	**0.0012**	**J**	0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 22:35	1
Cobalt	**0.00029**	**J**	0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 22:35	1
Lead	ND		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 22:35	1
Lithium	**0.034**		0.0080	0.0017	mg/L		09/11/17 14:00	09/12/17 22:35	1
Molybdenum	**0.0022**	**J**	0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 22:35	1
Selenium	**0.0084**		0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 22:35	1
Thallium	ND		0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 22:35	1

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

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0016**	**J**	0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 22:39	1
Arsenic	**0.0074**		0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 22:39	1
Barium	**0.060**		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 22:39	1
Beryllium	ND		0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 22:39	1
Cadmium	ND		0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 22:39	1
Calcium	**270**		1.0	0.58	mg/L		09/11/17 14:00	09/13/17 20:35	1
Chromium	**0.0017**	**J**	0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 22:39	1
Cobalt	**0.00055**	**J**	0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 22:39	1
Lead	ND		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 22:39	1
Lithium	**0.034**		0.0080	0.0017	mg/L		09/11/17 14:00	09/12/17 22:39	1
Molybdenum	**0.031**		0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 22:39	1
Selenium	**0.0086**		0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 22:39	1
Thallium	ND		0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 22:39	1

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 22:44	1
Arsenic	ND		0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 22:44	1
Barium	ND		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 22:44	1
Beryllium	ND		0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 22:44	1
Cadmium	ND		0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 22:44	1
Calcium	ND		1.0	0.58	mg/L		09/11/17 14:00	09/13/17 20:40	1
Chromium	ND		0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 22:44	1
Cobalt	ND		0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 22:44	1
Lead	ND		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 22:44	1
Lithium	ND		0.0080	0.0017	mg/L		09/11/17 14:00	09/12/17 22:44	1
Molybdenum	ND		0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 22:44	1
Selenium	ND		0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 22:44	1
Thallium	ND		0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 22:44	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000068**	**J**	0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 19:02	1

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 19:09	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 19:11	1

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 19:13	1

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 19:16	1

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 19:18	1

General Chemistry

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			09/08/17 14:30	1
Temperature	21.2	HF	1.0	1.0	Degrees C			09/08/17 14:30	1
Chloride	600		15	1.3	mg/L			09/15/17 01:16	5
Fluoride	1.3		0.50	0.060	mg/L			09/14/17 13:04	1
Sulfate	570		25	1.2	mg/L			09/15/17 01:16	5
Total Dissolved Solids (TDS)	2200		40	19	mg/L			09/08/17 08:11	1
Total Suspended Solids	760		20	5.5	mg/L			09/11/17 07:31	1

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.9	HF	0.1	0.1	SU			09/08/17 14:24	1
Temperature	21.2	HF	1.0	1.0	Degrees C			09/08/17 14:24	1
Chloride	370		30	2.5	mg/L			09/15/17 01:33	10
Fluoride	3.3		0.50	0.060	mg/L			09/14/17 13:21	1
Sulfate	830		50	2.3	mg/L			09/15/17 01:33	10
Total Dissolved Solids (TDS)	1900		40	19	mg/L			09/08/17 08:11	1
Total Suspended Solids	140		4.0	1.1	mg/L			09/11/17 07:31	1

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	10.9	HF	0.1	0.1	SU			09/08/17 14:45	1

General Chemistry (Continued)

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.1	HF	1.0	1.0	Degrees C			09/08/17 14:45	1
Chloride	260		15	1.3	mg/L			09/15/17 01:50	5
Fluoride	2.5		0.50	0.060	mg/L			09/14/17 13:38	1
Sulfate	660		25	1.2	mg/L			09/15/17 01:50	5
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L			09/08/17 08:11	1
Total Suspended Solids	6.8		4.0	1.1	mg/L			09/11/17 07:31	1

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			09/08/17 14:40	1
Temperature	20.9	HF	1.0	1.0	Degrees C			09/08/17 14:40	1
Chloride	180		3.0	0.25	mg/L			09/14/17 13:54	1
Fluoride	1.2		0.50	0.060	mg/L			09/14/17 13:54	1
Sulfate	190		5.0	0.23	mg/L			09/14/17 13:54	1
Total Dissolved Solids (TDS)	960		10	4.7	mg/L			09/08/17 08:11	1
Total Suspended Solids	5.2		4.0	1.1	mg/L			09/11/17 07:31	1

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	10.9	HF	0.1	0.1	SU			09/08/17 14:35	1
Temperature	20.9	HF	1.0	1.0	Degrees C			09/08/17 14:35	1
Chloride	260		15	1.3	mg/L			09/15/17 02:07	5
Fluoride	2.5		0.50	0.060	mg/L			09/14/17 14:11	1
Sulfate	660		25	1.2	mg/L			09/15/17 02:07	5
Total Dissolved Solids (TDS)	1500		20	9.4	mg/L			09/08/17 08:11	1
Total Suspended Solids	27		4.0	1.1	mg/L			09/11/17 07:31	1

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.9	HF	0.1	0.1	SU			09/08/17 15:01	1
Temperature	21.8	HF	1.0	1.0	Degrees C			09/08/17 15:01	1
Chloride	ND		3.0	0.25	mg/L			09/14/17 14:28	1
Fluoride	ND		0.50	0.060	mg/L			09/14/17 14:28	1
Sulfate	ND		5.0	0.23	mg/L			09/14/17 14:28	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/08/17 08:11	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			09/11/17 07:31	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.03		0.513	0.545	1.00	0.348	pCi/L	09/13/17 08:06	10/05/17 06:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	76.7		40 - 110	09/13/17 08:06	10/05/17 06:12	1

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.162		0.0830	0.0842	1.00	0.0807	pCi/L	09/13/17 08:06	10/05/17 06:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110	09/13/17 08:06	10/05/17 06:13	1

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0720		0.0504	0.0508	1.00	0.0636	pCi/L	09/13/17 08:06	10/05/17 06:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.7		40 - 110	09/13/17 08:06	10/05/17 06:13	1

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.309		0.0939	0.0979	1.00	0.0678	pCi/L	09/13/17 08:06	10/05/17 06:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110	09/13/17 08:06	10/05/17 06:13	1

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0937		0.0570	0.0576	1.00	0.0679	pCi/L	09/13/17 08:06	10/05/17 06:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110	09/13/17 08:06	10/05/17 06:13	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0252	U	0.0339	0.0340	1.00	0.0565	pCi/L	09/13/17 08:06	10/05/17 06:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*09/13/17 08:06*	*10/05/17 06:13*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**3.04**	**G**	1.22	1.25	1.00	1.71	pCi/L	09/13/17 13:23	09/19/17 10:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.7*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*
Y Carrier	*90.5*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.352	U	0.311	0.312	1.00	0.498	pCi/L	09/13/17 13:23	09/19/17 10:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.7*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*
Y Carrier	*88.6*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.340**		0.217	0.219	1.00	0.332	pCi/L	09/13/17 13:23	09/19/17 10:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.7*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*
Y Carrier	*89.7*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.542**		0.228	0.233	1.00	0.317	pCi/L	09/13/17 13:23	09/19/17 10:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*
Y Carrier	*88.6*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.305	U	0.227	0.229	1.00	0.357	pCi/L	09/13/17 13:23	09/19/17 10:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*
Y Carrier	*90.5*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.280	U	0.195	0.197	1.00	0.304	pCi/L	09/13/17 13:23	09/19/17 10:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*
Y Carrier	*94.2*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:14*	*1*

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

Client Sample ID: MW-7
Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**5.08**		1.32	1.37	5.00	1.71	pCi/L		10/05/17 16:37	1

Client Sample ID: MW-9
Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.514**		0.322	0.324	5.00	0.498	pCi/L		10/05/17 16:37	1

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

Client Sample ID: MW-10
Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.412		0.223	0.225	5.00	0.332	pCi/L		10/05/17 16:37	1

Client Sample ID: MW-13
Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.852		0.247	0.253	5.00	0.317	pCi/L		10/05/17 16:37	1

Client Sample ID: MW-10D
Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.399		0.234	0.236	5.00	0.357	pCi/L		10/05/17 16:37	1

Client Sample ID: MW-13EB
Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.305		0.198	0.200	5.00	0.304	pCi/L		10/05/17 16:37	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-294323/1-A
Matrix: Water
Analysis Batch: 294527

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.20	0.0081	mg/L		09/11/17 14:00	09/12/17 10:12	1

Lab Sample ID: LCS 240-294323/2-A
Matrix: Water
Analysis Batch: 294527

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.15		mg/L		115	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-294323/1-A
Matrix: Water
Analysis Batch: 294606

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/11/17 14:00	09/12/17 20:45	1
Arsenic	ND		0.0050	0.00075	mg/L		09/11/17 14:00	09/12/17 20:45	1
Barium	ND		0.0050	0.0022	mg/L		09/11/17 14:00	09/12/17 20:45	1
Beryllium	ND		0.0010	0.00031	mg/L		09/11/17 14:00	09/12/17 20:45	1
Cadmium	ND		0.0010	0.00021	mg/L		09/11/17 14:00	09/12/17 20:45	1
Calcium	ND		1.0	0.58	mg/L		09/11/17 14:00	09/12/17 20:45	1
Chromium	ND		0.0020	0.00098	mg/L		09/11/17 14:00	09/12/17 20:45	1
Cobalt	ND		0.0010	0.00019	mg/L		09/11/17 14:00	09/12/17 20:45	1
Lead	ND		0.0010	0.00045	mg/L		09/11/17 14:00	09/12/17 20:45	1
Molybdenum	ND		0.010	0.0011	mg/L		09/11/17 14:00	09/12/17 20:45	1
Selenium	ND		0.0050	0.00089	mg/L		09/11/17 14:00	09/12/17 20:45	1
Thallium	ND		0.0010	0.00020	mg/L		09/11/17 14:00	09/12/17 20:45	1

Lab Sample ID: MB 240-294323/1-A
Matrix: Water
Analysis Batch: 294794

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.0080	0.0017	mg/L		09/11/17 14:00	09/13/17 20:22	1

Lab Sample ID: LCS 240-294323/3-A
Matrix: Water
Analysis Batch: 294606

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.103		mg/L		103	80 - 120
Arsenic	1.00	0.935		mg/L		94	80 - 120
Barium	1.00	1.02		mg/L		102	80 - 120
Beryllium	1.00	1.09		mg/L		109	80 - 120
Cadmium	1.00	1.05		mg/L		105	80 - 120
Calcium	10.0	9.11		mg/L		91	80 - 120
Chromium	1.00	1.07		mg/L		107	80 - 120
Cobalt	1.00	1.10		mg/L		110	80 - 120

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

Lab Sample ID: LCS 240-294323/3-A
Matrix: Water
Analysis Batch: 294606

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	1.05		mg/L		105	80 - 120
Molybdenum	0.100	0.0973		mg/L		97	80 - 120
Selenium	1.00	0.947		mg/L		95	80 - 120
Thallium	0.250	0.265		mg/L		106	80 - 120

Lab Sample ID: LCS 240-294323/3-A
Matrix: Water
Analysis Batch: 294794

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294323

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.100	0.0918		mg/L		92	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-387326/1-A
Matrix: Water
Analysis Batch: 387448

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387326

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		09/12/17 11:52	09/12/17 18:58	1

Lab Sample ID: LCS 280-387326/2-A
Matrix: Water
Analysis Batch: 387448

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387326

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00500		mg/L		100	84 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-387159/4
Matrix: Water
Analysis Batch: 387159

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-387635/6
Matrix: Water
Analysis Batch: 387635

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/14/17 10:28	1
Fluoride	ND		0.50	0.060	mg/L			09/14/17 10:28	1
Sulfate	ND		5.0	0.23	mg/L			09/14/17 10:28	1

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

Lab Sample ID: LCS 280-387635/4
Matrix: Water
Analysis Batch: 387635

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.7		mg/L		100	90 - 110
Fluoride	5.00	5.32		mg/L		106	90 - 110
Sulfate	100	99.8		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-387635/5
Matrix: Water
Analysis Batch: 387635

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.6		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.31		mg/L		106	90 - 110	0	10
Sulfate	100	99.5		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-387635/3
Matrix: Water
Analysis Batch: 387635

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.47	J	mg/L		99	50 - 150
Fluoride	0.200	0.208	J	mg/L		104	50 - 150
Sulfate	2.50	2.33	J	mg/L		93	50 - 150

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

Lab Sample ID: MB 280-386969/1
Matrix: Water
Analysis Batch: 386969

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/08/17 08:11	1

Lab Sample ID: LCS 280-386969/2
Matrix: Water
Analysis Batch: 386969

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

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

Lab Sample ID: 280-100916-6 DU
Matrix: Water
Analysis Batch: 386969

Client Sample ID: MW-13EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	ND		ND		mg/L		NC	10

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

Lab Sample ID: MB 280-387146/1
Matrix: Water
Analysis Batch: 387146

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			09/11/17 07:31	1

Lab Sample ID: LCS 280-387146/2
Matrix: Water
Analysis Batch: 387146

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	94.0		mg/L		94	86 - 114

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-327003/1-A
Matrix: Water
Analysis Batch: 330402

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 327003

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03547	U	0.0449	0.0450	1.00	0.0744	pCi/L	09/13/17 08:06	10/05/17 06:10	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*09/13/17 08:06*	*10/05/17 06:10*	*1*

Lab Sample ID: LCS 160-327003/2-A
Matrix: Water
Analysis Batch: 330402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 327003

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	9.60	9.789		1.00	1.00	0.0760	pCi/L	102	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-327098/1-A
Matrix: Water
Analysis Batch: 327826

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 327098

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1750	U	0.205	0.206	1.00	0.338	pCi/L	09/13/17 13:23	09/19/17 10:13	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:13*	*1*
Y Carrier	*91.2*		*40 - 110*	*09/13/17 13:23*	*09/19/17 10:13*	*1*

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

Lab Sample ID: LCS 160-327098/2-A
Matrix: Water
Analysis Batch: 327826

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 327098

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			12.9	11.42		1.24	1.00	0.313	pCi/L	89	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*
Y Carrier	*92.3*		*40 - 110*

Metals

Prep Batch: 294323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total Recoverable	Water	3005A	
280-100916-2	MW-9	Total Recoverable	Water	3005A	
280-100916-3	MW-10	Total Recoverable	Water	3005A	
280-100916-4	MW-13	Total Recoverable	Water	3005A	
280-100916-5	MW-10D	Total Recoverable	Water	3005A	
280-100916-6	MW-13EB	Total Recoverable	Water	3005A	
MB 240-294323/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-294323/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-294323/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 294527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total Recoverable	Water	6010C	294323
280-100916-2	MW-9	Total Recoverable	Water	6010C	294323
280-100916-3	MW-10	Total Recoverable	Water	6010C	294323
280-100916-4	MW-13	Total Recoverable	Water	6010C	294323
280-100916-5	MW-10D	Total Recoverable	Water	6010C	294323
280-100916-6	MW-13EB	Total Recoverable	Water	6010C	294323
MB 240-294323/1-A	Method Blank	Total Recoverable	Water	6010C	294323
LCS 240-294323/2-A	Lab Control Sample	Total Recoverable	Water	6010C	294323

Analysis Batch: 294606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total Recoverable	Water	6020A	294323
280-100916-2	MW-9	Total Recoverable	Water	6020A	294323
280-100916-3	MW-10	Total Recoverable	Water	6020A	294323
280-100916-4	MW-13	Total Recoverable	Water	6020A	294323
280-100916-5	MW-10D	Total Recoverable	Water	6020A	294323
280-100916-6	MW-13EB	Total Recoverable	Water	6020A	294323
MB 240-294323/1-A	Method Blank	Total Recoverable	Water	6020A	294323
LCS 240-294323/3-A	Lab Control Sample	Total Recoverable	Water	6020A	294323

Analysis Batch: 294794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-4	MW-13	Total Recoverable	Water	6020A	294323
280-100916-5	MW-10D	Total Recoverable	Water	6020A	294323
280-100916-6	MW-13EB	Total Recoverable	Water	6020A	294323
MB 240-294323/1-A	Method Blank	Total Recoverable	Water	6020A	294323
LCS 240-294323/3-A	Lab Control Sample	Total Recoverable	Water	6020A	294323

Prep Batch: 387326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	7470A	
280-100916-2	MW-9	Total/NA	Water	7470A	
280-100916-3	MW-10	Total/NA	Water	7470A	
280-100916-4	MW-13	Total/NA	Water	7470A	
280-100916-5	MW-10D	Total/NA	Water	7470A	
280-100916-6	MW-13EB	Total/NA	Water	7470A	
MB 280-387326/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-387326/2-A	Lab Control Sample	Total/NA	Water	7470A	

Metals (Continued)

Analysis Batch: 387448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	7470A	387326
280-100916-2	MW-9	Total/NA	Water	7470A	387326
280-100916-3	MW-10	Total/NA	Water	7470A	387326
280-100916-4	MW-13	Total/NA	Water	7470A	387326
280-100916-5	MW-10D	Total/NA	Water	7470A	387326
280-100916-6	MW-13EB	Total/NA	Water	7470A	387326
MB 280-387326/1-A	Method Blank	Total/NA	Water	7470A	387326
LCS 280-387326/2-A	Lab Control Sample	Total/NA	Water	7470A	387326

General Chemistry

Analysis Batch: 386969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	SM 2540C	
280-100916-2	MW-9	Total/NA	Water	SM 2540C	
280-100916-3	MW-10	Total/NA	Water	SM 2540C	
280-100916-4	MW-13	Total/NA	Water	SM 2540C	
280-100916-5	MW-10D	Total/NA	Water	SM 2540C	
280-100916-6	MW-13EB	Total/NA	Water	SM 2540C	
MB 280-386969/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-386969/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-100916-6 DU	MW-13EB	Total/NA	Water	SM 2540C	

Analysis Batch: 387146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	SM 2540D	
280-100916-2	MW-9	Total/NA	Water	SM 2540D	
280-100916-3	MW-10	Total/NA	Water	SM 2540D	
280-100916-4	MW-13	Total/NA	Water	SM 2540D	
280-100916-5	MW-10D	Total/NA	Water	SM 2540D	
280-100916-6	MW-13EB	Total/NA	Water	SM 2540D	
MB 280-387146/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-387146/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 387159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	9040B	
280-100916-2	MW-9	Total/NA	Water	9040B	
280-100916-3	MW-10	Total/NA	Water	9040B	
280-100916-4	MW-13	Total/NA	Water	9040B	
280-100916-5	MW-10D	Total/NA	Water	9040B	
280-100916-6	MW-13EB	Total/NA	Water	9040B	
LCS 280-387159/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 387635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	9056A	
280-100916-1	MW-7	Total/NA	Water	9056A	
280-100916-2	MW-9	Total/NA	Water	9056A	
280-100916-2	MW-9	Total/NA	Water	9056A	

General Chemistry (Continued)

Analysis Batch: 387635 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-3	MW-10	Total/NA	Water	9056A	
280-100916-3	MW-10	Total/NA	Water	9056A	
280-100916-4	MW-13	Total/NA	Water	9056A	
280-100916-5	MW-10D	Total/NA	Water	9056A	
280-100916-5	MW-10D	Total/NA	Water	9056A	
280-100916-6	MW-13EB	Total/NA	Water	9056A	
MB 280-387635/6	Method Blank	Total/NA	Water	9056A	
LCS 280-387635/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-387635/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-387635/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 327003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	PrecSep-21	
280-100916-2	MW-9	Total/NA	Water	PrecSep-21	
280-100916-3	MW-10	Total/NA	Water	PrecSep-21	
280-100916-4	MW-13	Total/NA	Water	PrecSep-21	
280-100916-5	MW-10D	Total/NA	Water	PrecSep-21	
280-100916-6	MW-13EB	Total/NA	Water	PrecSep-21	
MB 160-327003/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-327003/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 327098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-100916-1	MW-7	Total/NA	Water	PrecSep_0	
280-100916-2	MW-9	Total/NA	Water	PrecSep_0	
280-100916-3	MW-10	Total/NA	Water	PrecSep_0	
280-100916-4	MW-13	Total/NA	Water	PrecSep_0	
280-100916-5	MW-10D	Total/NA	Water	PrecSep_0	
280-100916-6	MW-13EB	Total/NA	Water	PrecSep_0	
MB 160-327098/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-327098/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-7

Date Collected: 09/07/17 09:40
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-1

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	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			294527	09/12/17 16:56	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294606	09/12/17 22:12	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	387326	09/12/17 11:52	CDH	TAL DEN
Total/NA	Analysis	7470A		1			387448	09/12/17 19:02	CDH	TAL DEN
Total/NA	Analysis	9040B		1			387159	09/08/17 14:30	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	387635	09/14/17 13:04	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	387635	09/15/17 01:16	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	386969	09/08/17 08:11	PAH	TAL DEN
Total/NA	Analysis	SM 2540D		1	50 mL	250 mL	387146	09/11/17 07:31	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			250.87 mL	1.0 g	327003	09/13/17 08:06	LDE	TAL SL
Total/NA	Analysis	9315		1			330513	10/05/17 06:12	RTM	TAL SL
Total/NA	Prep	PrecSep_0			250.87 mL	1.0 g	327098	09/13/17 13:23	LDE	TAL SL
Total/NA	Analysis	9320		1			327826	09/19/17 10:14	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			330560	10/05/17 16:37	RTM	TAL SL

Client Sample ID: MW-9

Date Collected: 09/06/17 13:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-2

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	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			294527	09/12/17 17:10	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294606	09/12/17 22:17	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	387326	09/12/17 11:52	CDH	TAL DEN
Total/NA	Analysis	7470A		1			387448	09/12/17 19:09	CDH	TAL DEN
Total/NA	Analysis	9040B		1			387159	09/08/17 14:24	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	387635	09/14/17 13:21	TLP	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	387635	09/15/17 01:33	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	386969	09/08/17 08:11	PAH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	387146	09/11/17 07:31	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.40 mL	1.0 g	327003	09/13/17 08:06	LDE	TAL SL
Total/NA	Analysis	9315		1			330513	10/05/17 06:13	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.40 mL	1.0 g	327098	09/13/17 13:23	LDE	TAL SL
Total/NA	Analysis	9320		1			327826	09/19/17 10:14	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			330560	10/05/17 16:37	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-10

Date Collected: 09/06/17 14:45
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-3

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	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			294527	09/12/17 17:15	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294606	09/12/17 22:21	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	387326	09/12/17 11:52	CDH	TAL DEN
Total/NA	Analysis	7470A		1			387448	09/12/17 19:11	CDH	TAL DEN
Total/NA	Analysis	9040B		1			387159	09/08/17 14:45	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	387635	09/14/17 13:38	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	387635	09/15/17 01:50	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	386969	09/08/17 08:11	PAH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	387146	09/11/17 07:31	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.58 mL	1.0 g	327003	09/13/17 08:06	LDE	TAL SL
Total/NA	Analysis	9315		1			330513	10/05/17 06:13	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.58 mL	1.0 g	327098	09/13/17 13:23	LDE	TAL SL
Total/NA	Analysis	9320		1			327826	09/19/17 10:14	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			330560	10/05/17 16:37	RTM	TAL SL

Client Sample ID: MW-13

Date Collected: 09/06/17 10:15
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-4

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	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			294527	09/12/17 17:20	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294606	09/12/17 22:35	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294794	09/13/17 20:31	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	387326	09/12/17 11:52	CDH	TAL DEN
Total/NA	Analysis	7470A		1			387448	09/12/17 19:13	CDH	TAL DEN
Total/NA	Analysis	9040B		1			387159	09/08/17 14:40	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	387635	09/14/17 13:54	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	386969	09/08/17 08:11	PAH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	387146	09/11/17 07:31	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.32 mL	1.0 g	327003	09/13/17 08:06	LDE	TAL SL
Total/NA	Analysis	9315		1			330513	10/05/17 06:13	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.32 mL	1.0 g	327098	09/13/17 13:23	LDE	TAL SL
Total/NA	Analysis	9320		1			327826	09/19/17 10:14	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			330560	10/05/17 16:37	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-100916-1

Client Sample ID: MW-10D

Date Collected: 09/06/17 15:00
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-5

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	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			294527	09/12/17 17:25	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294606	09/12/17 22:39	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294794	09/13/17 20:35	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	387326	09/12/17 11:52	CDH	TAL DEN
Total/NA	Analysis	7470A		1			387448	09/12/17 19:16	CDH	TAL DEN
Total/NA	Analysis	9040B		1			387159	09/08/17 14:35	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	387635	09/14/17 14:11	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	387635	09/15/17 02:07	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	386969	09/08/17 08:11	PAH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	387146	09/11/17 07:31	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.53 mL	1.0 g	327003	09/13/17 08:06	LDE	TAL SL
Total/NA	Analysis	9315		1			330513	10/05/17 06:13	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.53 mL	1.0 g	327098	09/13/17 13:23	LDE	TAL SL
Total/NA	Analysis	9320		1			327826	09/19/17 10:14	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			330560	10/05/17 16:37	RTM	TAL SL

Client Sample ID: MW-13EB

Date Collected: 09/06/17 10:30
Date Received: 09/07/17 10:45

Lab Sample ID: 280-100916-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6010C		1			294527	09/12/17 17:30	AS1	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294606	09/12/17 22:44	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	294323	09/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	6020A		1			294794	09/13/17 20:40	DSH	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	387326	09/12/17 11:52	CDH	TAL DEN
Total/NA	Analysis	7470A		1			387448	09/12/17 19:18	CDH	TAL DEN
Total/NA	Analysis	9040B		1			387159	09/08/17 15:01	A1D	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	387635	09/14/17 14:28	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	386969	09/08/17 08:11	PAH	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	387146	09/11/17 07:31	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			999.55 mL	1.0 g	327003	09/13/17 08:06	LDE	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	330513	10/05/17 06:13	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.55 mL	1.0 g	327098	09/13/17 13:23	LDE	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	327826	09/19/17 10:14	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			330560	10/05/17 16:37	RTM	TAL SL

Lab Chronicle

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

TestAmerica Job ID: 280-100916-1

Laboratory References:

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

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

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-100916-1

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
Oregon	NELAP	10	4025	01-08-18

The following analytes are included in this report, but are not accredited/certified under this accreditation/certification:

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

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 *

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
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
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

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

Accreditation/Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-100916-1
Project/Site: Xcel Energy GW CCR Monitoring - Cherokee

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
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18

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~~ Matt Rohr
Company: HDR Inc
Address: 9781 S. Meridian Blve Suite 400
City: Englewood
State, Zip: CO, 80112
Phone: ~~720-633-2380(Tel)~~ (303)764-1537
Email: ~~anna.lundin@hdrinc.com~~ Matthew.Rohr@hdrinc.com
Project Name: Xcel Energy GW CCR Monitoring - Cherokee
Site: Colorado

Sampler: N. Hanrahan
Phone:
Lab PM: Rothmeyer, Stephanie K
E-Mail: stephanie.rothmeyer@testamericainc.com
Carrier Tracking No(s):
COC No:
Page: Page 1 of 1
Job #:

Due Date Requested:
TAT Requested (days): Standard
PO #: DEN-001
WO #:
Project #: 28014371
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:		X	X	N	D	N	N	D	X	
MW-7	9/7/17	0940	G	Water	N	N	X	X	X	X	X		Limited Water
~~MW-8~~	~~9/6/17~~			Water	~~N~~	N							
MW-9	9/6/17	1300	G	Water	N	N	X	X	X	X	X		Limited water
MW-10	9/6/17	1445	G	Water	N	N	X	X	X	X	X		
MW-13	9/6/17	1015	G	Water	N	N	X	X	X	X	X		
~~Field Duplicate~~ MW-10D	9/6/17	1500	G	Water	N	N	X	X	X	X	X		
~~Equipment Blank~~ MW-13EB	9/6/17	1030	G	Water	N	N	X	X	X	X	X		

280-100916 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
[signature]	9/7/17 1045	HDR	[signature]	9-7-17 1045	
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: 2.6, 0.8+0.1 IR#7 transferred by SS 9/7/17

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: 280-411323.1
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): NELAP - Oregon		Job #: 280-100916-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 10/5/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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/ (MOD) Local Method	9315_Ra226/PrecSep_21 Radium-226 - 1/3 - SUB	9320_Ra228/PrecSep_0 Radium-228 - 2/3 - SUB	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7 (280-100916-1)	9/7/17	09:40 Mountain		Water			X	X	X	1	
MW-9 (280-100916-2)	9/6/17	13:00 Mountain		Water			X	X	X	1	
MW-10 (280-100916-3)	9/6/17	14:45 Mountain		Water			X	X	X	2	
MW-13 (280-100916-4)	9/6/17	10:15 Mountain		Water			X	X	X	2	
MW-10D (280-100916-5)	9/6/17	15:00 Mountain		Water			X	X	X	2	
MW-13EB (280-100916-6)	9/6/17	10:30 Mountain		Water			X	X	X	2	

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

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	9/8/17 1530			9/8/17 0900	TASL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

280-100916 Login
PM: Rothmeyer, Stephanie K
Company: IIDR Inc

CONDITION UPON RECEIPT FORM

Client: TA Denver

Initiated by: KNT Date: 9/12/17 Time: 0900 Shipper: Fedex Package Quantity: 4

*Numbered shipping lines correspond to Numbered Cooler and Sample Temp lines

**Sample must be received at < 6°- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

	Shipping #(s):*	Thermometer #:	Package Temp:**	Document #:
1.	mstr# 7367 5479 7858	15	18.0	
2.	↓ ↓ ↓	KNT 9/12/17 ~~15~~ 16	KNT 9/12/17 ~~18.0~~ 15.9	
3.	mstr# 7367 5479 8350	16	0.5	
4.	↓ ↓ ↓	15	18.0	
5.				
6.				
7.				
8.				
9.				
10.				

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y (N) N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	(Y) N N/A	Containers for C-14, H-3 & I-129/131 marked with "Do Not Preserve" label?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	(Y) N	Sample received in proper containers?
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Soil containers for C-14, H-3,Tc-99 & I-129/131 marked with "Do Not Dry" label?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease and soils.

Notes: Cooler # 2 received outside of temperature needed to be, <6°C.

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

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

15.6 | C15.6

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: 280-411262.1
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): NELAP - Oregon		Job #: 280-100916-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 10/2/2017			
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 - Cherokee	Project #: 28014371			
Site: Xcel Energy CCR - Cherokee 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:

535

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 Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-7 (280-100916-1)	9/7/17	09:40 Mountain		Water			X	X	1	, Use Collision Cell
MW-9 (280-100916-2)	9/6/17	13:00 Mountain		Water			X	X	1	Use Collision Cell
MW-10 (280-100916-3)	9/6/17	14:45 Mountain		Water			X	X	1	, Use Collision Cell
MW-13 (280-100916-4)	9/6/17	10:15 Mountain		Water			X	X	1	Use Collision Cell
MW-10D (280-100916-5)	9/6/17	15:00 Mountain		Water			X	X	1	, Use Collision Cell
MW-13EB (280-100916-6)	9/6/17	10:30 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
	9/8/17 1600			9/9/17 930	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:

Cooler Received on 9/19/17 Opened on 9/19/17

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. 15.4 °C Corrected Cooler Temp. 15.6 °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 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

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Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-100916-1

Login Number: 100916
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.	False	Refer to Job Narrative for details.
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	False	Refer to Job Narrative for details.
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-100916-1

Login Number: 100916
List Number: 3
Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis
List Creation: 09/12/17 03:53 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	18.0,15.9,0.5,18.0
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 - Cherokee

TestAmerica Job ID: 280-100916-1

Method: 9315 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (40-110)
280-100916-1	MW-7	76.7
280-100916-2	MW-9	86.7
280-100916-3	MW-10	94.7
280-100916-4	MW-13	92.9
280-100916-5	MW-10D	92.9
280-100916-6	MW-13EB	101
LCS 160-327003/2-A	Lab Control Sample	101
MB 160-327003/1-A	Method Blank	100

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)
280-100916-1	MW-7	76.7	90.5
280-100916-2	MW-9	86.7	88.6
280-100916-3	MW-10	94.7	89.7
280-100916-4	MW-13	92.9	88.6
280-100916-5	MW-10D	92.9	90.5
280-100916-6	MW-13EB	101	94.2
LCS 160-327098/2-A	Lab Control Sample	101	92.3
MB 160-327098/1-A	Method Blank	100	91.2

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier