



BACKGROUND WATER QUALITY STATISTICAL CERTIFICATION

for Compliance with the Coal Combustion
Residuals (CCR) Rule

Hayden Station

Public Service Company of Colorado

February 19, 2021



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Table of Abbreviations and Acronyms

Abbreviation	Definition
BDL	below detection limits
BTV	background threshold value
CCR	Coal Combustion Residuals
COI	constituent of interest
EDD	electronic data deliverable
EPA	Environmental Protection Agency
GOF	Goodness-of-Fit
LCS	Laboratory Control Samples
MDL	method detection limit
MLE	Maximum Likelihood Estimate
MS/MSD	Matrix Spike/Duplicate
ND	non-detects
QC	quality control
RL	reporting limit
SOP	Standard Operating Procedure
SSI	statistically significant increase
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UPL	upper prediction limit

Certification

Background Water Quality Statistical Certification for Compliance with the Coal Combustion Residuals Rule

I hereby certify to the best of my knowledge that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area.

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, 2021



1.0 Introduction

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Hayden Station, located in Routt County, Colorado (**Figure 1**), has an ash disposal facility subject to the CCR Rule (**Figure 2**). Part 257.93 of the CCR Rule requires that a certification be obtained from a professional engineer describing the statistical method selected to evaluate the groundwater monitoring data at the facility.

The objective of this report is to document the selection of the statistical method for each Appendix III and IV constituent of interest (COI) in the background/upgradient well for the CCR facility. The original certified CCR monitoring well network for the Hayden CCR landfill consisted of four wells completed in the colluvium that underlies the landfill; one upgradient of the landfill and three at the downgradient waste boundary. Upgradient colluvial monitoring well, MW-5, has continued to be dry since program implementation and comparison of upgradient and downgradient groundwater chemistry in the colluvial wells has not been possible. The colluvium under the landfill discharges to the adjacent alluvial aquifer of Sage Creek. Therefore, four existing monitoring wells in the adjacent alluvial aquifer were added to the certified groundwater monitoring network for the landfill. These four alluvial wells are located both upgradient and downgradient of the CCR landfill, and are used to supplement the colluvial landfill monitoring wells. It is not appropriate to compare alluvial water quality to colluvial water quality; however, collecting samples from the alluvial well network will provide background groundwater that has not been impacted by the CCR unit, as well as groundwater downgradient of the CCR unit in compliance with the CCR Rule. The colluvial wells were sampled for CCR COIs background water quality between December 2, 2015 and July 11, 2017. The alluvial wells were added to the network and sampled between April 11, 2018 and June 16, 2020. These alluvial well monitoring dates will be used to calculate background groundwater quality.

The water quality data collected from the alluvial monitoring well located upgradient of the CCR unit has been compiled and statistically analyzed to develop background threshold values (BTVs) for each COI. The statistical method selected to represent background water quality is the upper prediction limit (UPL) and is one of the methods described in the CCR Rule Part 257.93 (f)(3). This background water quality report documents the background sample events and describes the statistics performed to develop the BTVs.

2.0 Facility Description

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

2.1 Hydrogeology

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

Within approximately 100 feet west of the landfill, the uppermost aquifer is within the alluvium of the Sage Creek valley. Monitoring wells W-1 through W-4 were drilled to depths of 15 to 20 feet and encountered layers of sand and gravel alternating with finer-grained layers of sand, silt and clay. Groundwater in the Sage Creek alluvial aquifer is 5 to 10 feet below surface (Xcel, 2001). Groundwater present in the Sage Creek valley bottom alluvium flows to the north (**Appendix A**).

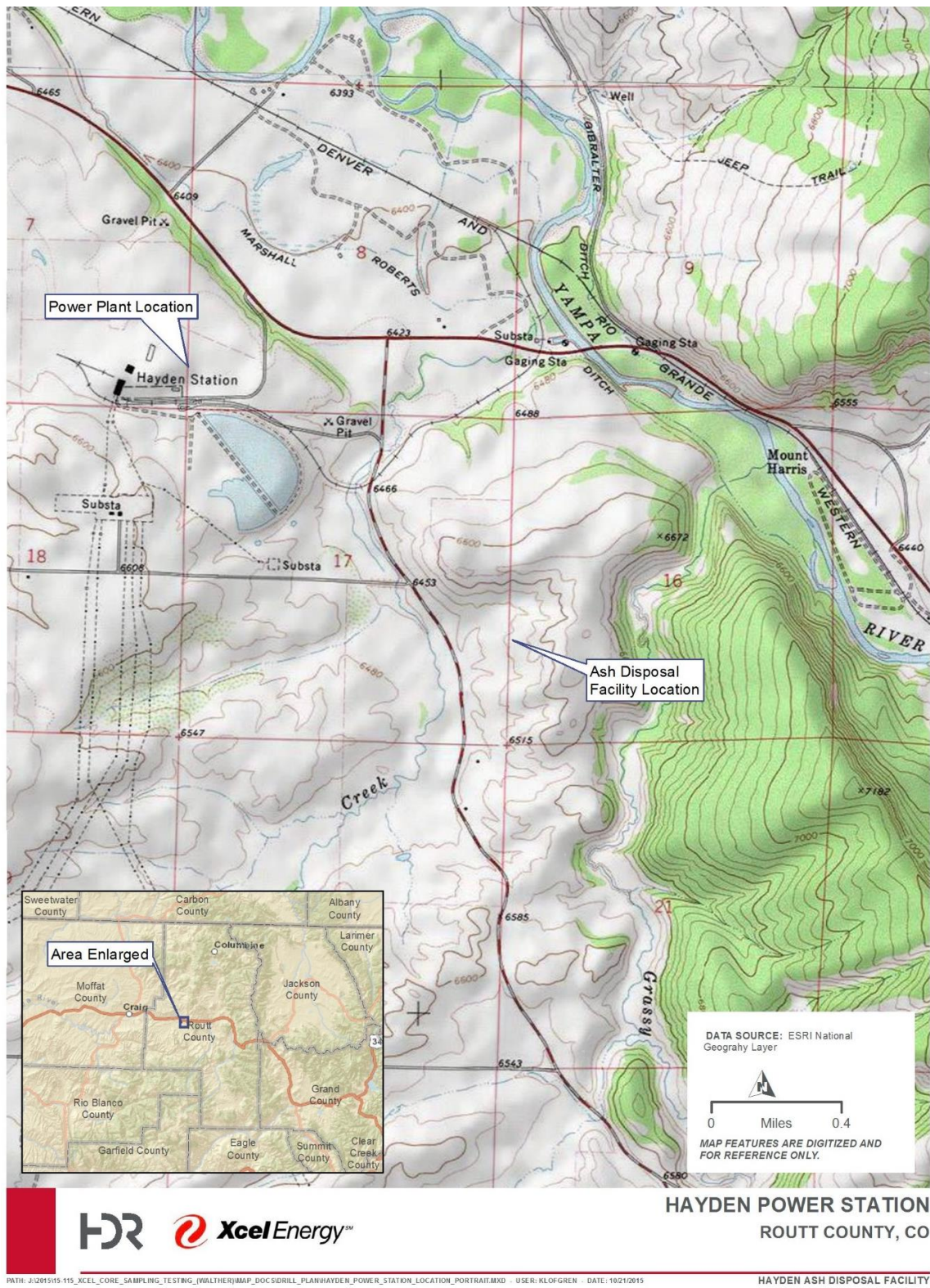


Figure 1. Vicinity map for Hayden Station.

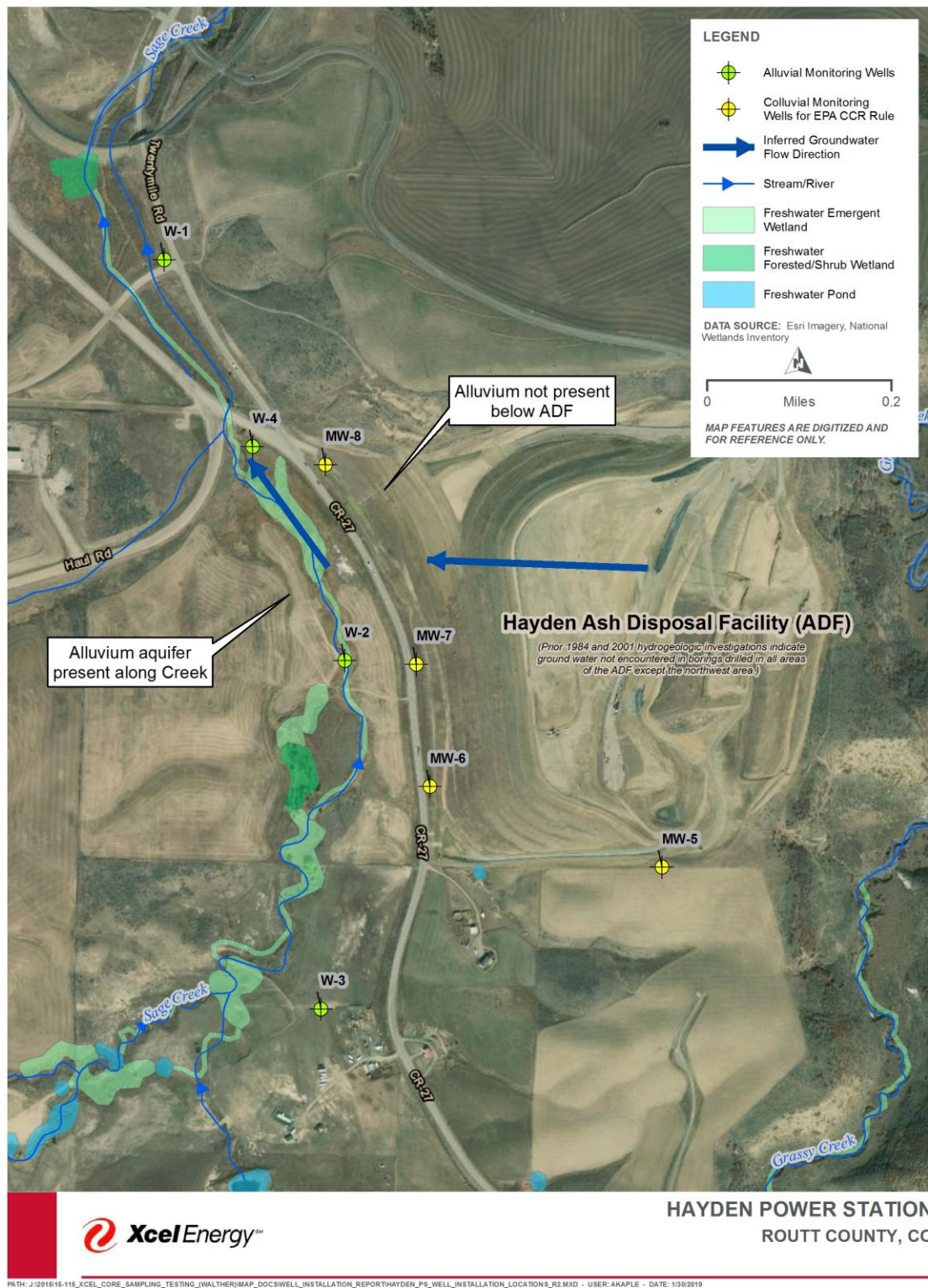


Figure 2. Hayden Station – CCR unit and monitoring well location map.

3.0 Monitoring Methods

3.1 Monitoring Frequency

As stipulated in the CCR Rule, a minimum eight rounds of background groundwater sampling were completed between April 2018 and November 2018 in the alluvial monitoring wells west of the landfill. Later groundwater sample events for detection and assessment monitoring were conducted in April and December 2019 and June 2020. The background well (W-3) water quality from these dates were pooled with the background sample event data to supplement the background data statistical development of background threshold values (BTVs), thus adding statistical strength to the BTVs by having more sample dates over a longer period. This Background Water Quality Statistical Certification presents the results from alluvial background well W-3 for the 11 events completed on the following dates:

✓ April 11, 2018	✓ October 10, 2018
✓ May 14, 2018	✓ November 13, 2018
✓ June 11, 2018	✓ April 15, 2019
✓ July 10, 2018	✓ December 19, 2019
✓ August 13, 2018	✓ June 16, 2020
✓ September 10, 2018	

3.2 Water Levels and Sample Collection

Water levels were recorded for each well prior to sample collection. Groundwater quality samples were collected from each of the four alluvial monitoring wells. Groundwater sample collection protocols followed the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2015). 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. Water samples were delivered under Chain of Custody to Test America in Denver, Colorado.

3.3 Analytical Testing

Groundwater samples were analyzed for the parameters shown in **Table 1**, which include all of the parameters in Appendices III and IV of CCR Rule Part 257. In addition to the parameters listed in Table 1, each sample was also analyzed for Total Suspended Solids (TSS), which can bias resulting total metals concentrations, as compared to dissolved metals concentrations.

Table 1. Groundwater quality parameters

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

4.0 Data Validation and Data Management

All data validation was performed per the Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule document (HDR, 2019). This evaluation, completed by the HDR Project Chemist, included a review of field Quality Control (QC), lab QC, and analytical samples, along with calibration information. QC analyses on Laboratory Control Samples (LCS), Matrix Spike/Duplicate (MS/MSD) samples, and Field Duplicate samples were performed per required quota.

Data management for all sampling events follows the protocol detailed in the Data Management and Statistical Procedures Plan (HDR, 2019). The Project Data Manager inputs data from field data forms into an Excel database, specifically recording static water level data, field parameter values, and general pertinent field observations. The Project Database Manager acquires the electronic field database from the Data Manager and the laboratory electronic data deliverable (EDD) files after receiving notification from the Data Validator that the data validation process is complete. Review includes ensuring that the EDD files conform to the required structure and language of the database. Certain fields within the EDD files have regulated language that must correspond to the lookup/valid value reference tables contained in the database, which helps to ensure that data are coded and stored uniformly within the database; this is known as parity. Adjustments are made, as necessary, to ensure that all samples and data flags are properly set in the EDD. Once review is complete and

the EDD passes a final check using an EQulS Data Processor program, the files are uploaded into an EQulS database for the project where data can be provided to the Statistician for use in ProUCL.

5.0 Groundwater Flow Direction

Water levels were measured in the monitoring wells during each sample event. The water levels at monitoring wells were recorded during monitoring events. Colluvial upgradient well MW-5 has been consistently dry over the five year monitoring period, reflecting the normally dry background conditions in the colluvium under the landfill and above the Lewis Shale aquitard. However, groundwater is observed in the colluvial downgradient wells MW-6, MW-7 and MW-8 at the waste boundary. Because the colluvium is otherwise dry, the water in these wells is likely seepage from within the footprint of the landfill, which is collecting as perched groundwater, flowing along the top of bedrock and discharging to the northwest into the alluvial aquifer of Sage Creek. The groundwater flow direction appears to be consistent with previous conceptual models in that groundwater flow direction between the three colluvial downgradient wells is to the north. No options for an upgradient well in the colluvium exist, and since the colluvium discharges to the alluvial aquifer, monitoring wells in the alluvial aquifer can be used to supplement the monitoring network. Groundwater elevations in alluvial and colluvial wells are displayed on the potentiometric contour map in **Appendix A**. Groundwater flow in the alluvial aquifer is north, consistent with the flow of Sage Creek. The potentiometric contour map confirms well W-3 as being upgradient of the influence of the landfill and is appropriate to represent background water quality for the landfill in the alluvial aquifer.

6.0 Evaluation of Background Water Quality Data

6.1 Constituents

Laboratory reports from the eleven background sampling events are provided in **Appendix B**. The statistical analyses detailed in the below sections pertain to samples collected only from background monitoring well W-3 between April 11, 2018 and June 16, 2020.

A total of eleven groundwater sampling events occurred between April 11, 2018 and June 16, 2020, for constituents listed in Appendix III and Appendix IV of the CCR Rule and for certain physical parameters. Only non-filtered Appendix III and IV sample results were utilized for the statistical analysis. Total suspended solids was analyzed to help provide context to observed patterns for Appendix III and IV constituents. For example, their results may determine if there are possible conditions that might impact the representativeness of the data.

Reporting units, number of observations, number of non-detects (NDs), and percentage of NDs below detection limits (BDL) for each constituent are listed in **Table 2**. The June 11, 2018 sampling event for boron and the December 19, 2019 sampling event for antimony, arsenic, beryllium, chromium, lead, mercury, and thallium were not reported due to lab error.

Three sample events were identified as having likely errors, and these erroneous results were removed from the data set. Specifically, this includes lead and molybdenum from the May 21, 2018 event and fluoride from the December 18, 2019 sampling event. These constituents were all non-

detect, but had higher than usual method detection limits because the samples had to be diluted due to matrix interference from high conductivity. In addition, fluoride concentrations were unusually high for all wells during the June 16, 2020 sampling event (as shown in Section 6.2 Outliers). No explanation could be identified; however these outliers were reason to question the validity of the data and therefore these data were omitted. Even after omissions, each COI has eight or more observations used to compile the BTV. Statistical analysis was performed and the data was analyzed for outliers, data distribution, and trends.

Table 2. Preliminary Data Analysis					
Constituent	CAS Number	Unit	No. Observations	No. BDL	% BDL
Appendix III					
Boron	7440-42-8	mg/l	10	0	0%
Calcium	7440-70-2	mg/l	11	0	0%
Chloride (as Cl)	16887-00-6	mg/l	11	0	0%
Fluoride	16984-48-8	mg/l	10	1	10%
pH (lab)	PH	su	11	0	0%
Sulfate (as SO ₄)	14808-79-8	mg/l	11	0	0%
Total Dissolved Solids	TDS	mg/l	11	0	0%
Appendix IV					
Antimony	7440-36-0	mg/l	10	10	100%
Arsenic	7440-38-2	mg/l	10	10	100%
Barium	7440-39-3	mg/l	11	0	0%
Beryllium	7440-41-7	mg/l	10	10	100%
Cadmium	7440-43-9	mg/l	11	0	0%
Chromium, Total	7440-47-3	mg/l	10	9	90%
Cobalt	7440-48-4	mg/l	11	1	9%
Fluoride	16984-48-8	mg/l	10	1	10%
Lead	7439-92-1	mg/l	9	8	89%
Lithium	7439-93-2	mg/l	11	0	0%
Mercury	7439-97-6	mg/l	8	8	100%
Molybdenum	7439-98-7	mg/l	10	0	0%
Radium-226+228	425	pci/l	11	1	9%
Selenium	7782-49-2	mg/l	11	0	0%
Thallium	7440-28-0	mg/l	10	9	90%
Additional Parameters					
Radium-226	13982-63-3	pci/l	11	7	64%
Radium-228	15262-20-1	pci/l	11	4	36%
Total Suspended Solids	TSS	mg/l	9	1	11%

6.2 Outliers

Outliers are values that are not representative of the population from which they are sampled. The data set was screened for outliers using the Dixon's Outlier Test which is suitable for data sets containing less than 25 samples. The outlier test was conducted using a significance of 1 percent. For those constituents which had NDs, the NDs were removed prior to testing for outliers. Statistical outliers are listed in **Table 3**.

Table 3. Dixon's outlier test results conducted at the 1% level of significance						
Constituent	Unit	Mean	Standard Deviation	No. of Observations	No. of NDs	Outliers
Appendix III						
Chloride (as Cl)	mg/l	187	11.9	11	0	160
Fluoride	mg/l	1.78	3.94	11	1	13.0
Total Dissolved Solids	mg/l	12,818	1,537	11	0	17,000
Appendix IV						
Barium	mg/l	0.00692	0.000764	11	0	0.00870
Cadmium	mg/l	0.000409	0.000267	11	0	0.00120
Fluoride	mg/l	1.78	3.94	11	1	13.0

Three Appendix III constituents (chloride (as Cl), fluoride, and total dissolved solids) and three Appendix IV constituents (barium, cadmium, and fluoride) had statistical outliers. A visual representation of the trends over the sampling dates for each constituent are shown in **Figure 3** to **Figure 7**. Quality control conducted on the sampling protocols and laboratory results did not indicate reasons for the noted concentration of the outliers on the dates they were sampled. No unusual weather or anthropogenic activity occurred which could explain the higher concentrations. For the purpose of estimating background field conditions, all values will be used for barium, cadmium, chloride (as Cl) and total dissolved solids. Because the sample size is very small, from a statistical perspective, the variability in the concentrations of these constituents will change as additional samples are obtained. The sample's variability for each constituent will approach the true underlying variability of concentrations in groundwater in the vicinity of the background well with the increasing number of samples. The distributional pattern for barium, cadmium, chloride (as Cl) and total dissolved solids will continue to be monitored as sampling events are added to the background.

Unusually high concentrations of fluoride were observed in all wells for the same June 16, 2020 sampling event and the unusually high fluoride concentrations from this sampled event were removed from the data set for all wells because all wells were elevated to a similar extent.

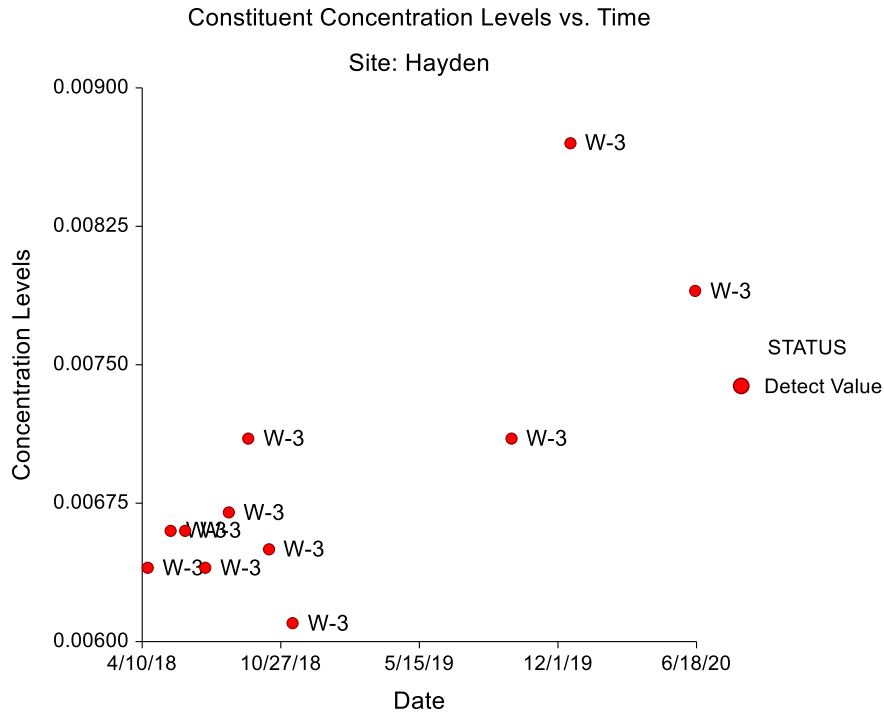


Figure 3. Barium (mg/l) vs. Time.

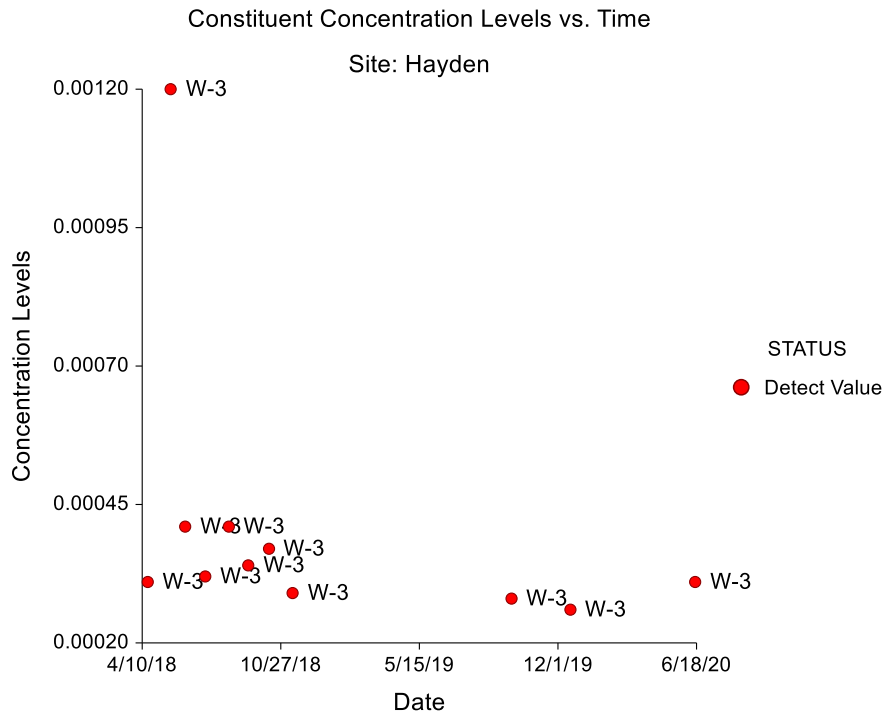


Figure 4. Cadmium (mg/l) vs. Time.

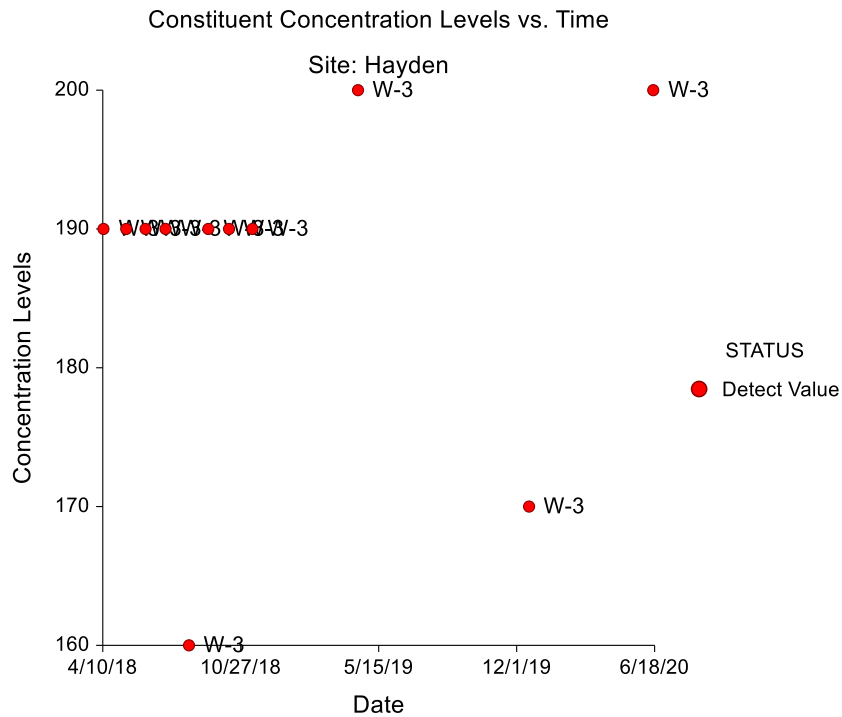


Figure 5. Chloride (as Cl) (mg/l) vs. Time.

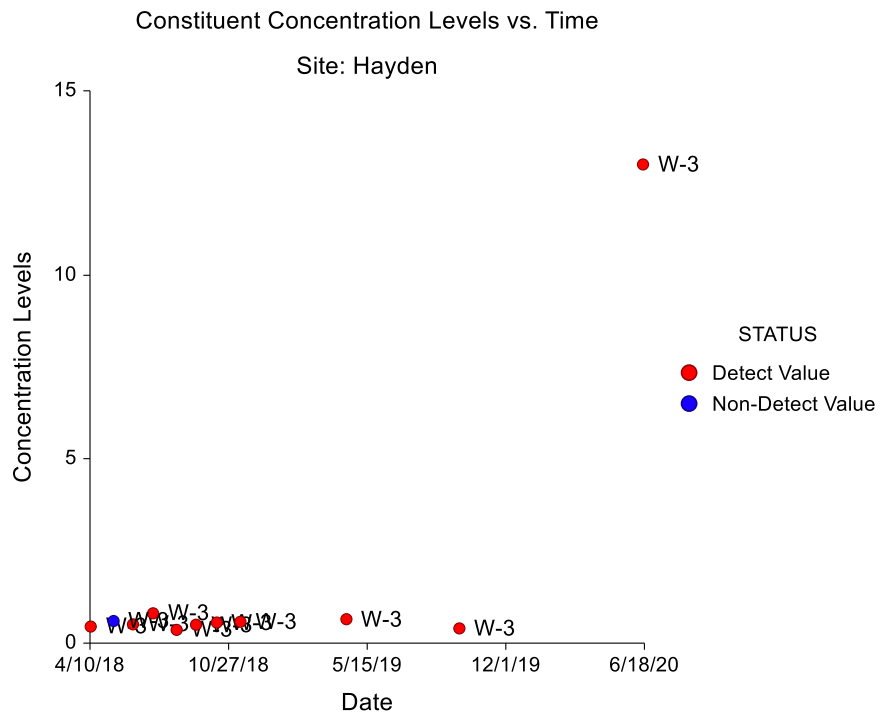


Figure 6. Fluoride (mg/l) vs. Time.

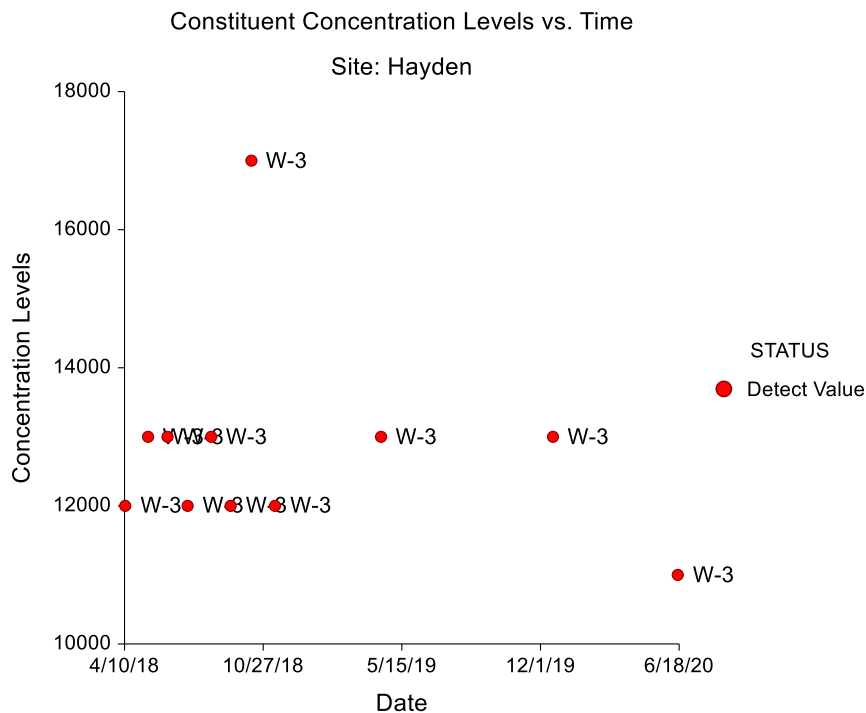


Figure 7. Total Dissolved Solids (mg/l) vs. Time.

6.3 Data Distribution

Groundwater data was fitted to known distribution models using Goodness-of-Fit (GOF) tests incorporated in ProUCL. For data sets comprised of 50 or fewer samples, ProUCL's GOF module incorporates the Shapiro-Wilk to determine normal or lognormal distribution and Anderson-Darling to determine gamma distribution. Note that ProUCL does not provide GOF results for data sets with less than three detected values due to insufficient data. For purposes of estimating background concentration levels, these data sets with less than three detected values will be treated under nonparametric distribution assumptions with the maximum detected value chosen to represent the background concentration levels until more data can be collected.

Appendix III constituents chloride (as Cl) and total dissolved solids and Appendix IV constituents cadmium and lithium were found to have a nonparametric fit to their respective data sets. Appendix IV constituents antimony, arsenic, beryllium, chromium, lead, mercury and thallium will be treated under nonparametric distribution assumptions as they all have more than 50 percent non-detects. Additional sampling rounds are needed in order to determine if these constituents' data sets are better described using parametric distributions such as normal, lognormal, or gamma. All remaining constituents have a parametric distribution.

6.4 Serial Correlation

Sources for serial correlation in groundwater samples can be due to temporal effects (i.e., autocorrelation) or seasonal effects (i.e., seasonality). Part §257.93(g)(6) of the CCR Rule requires that if necessary, the statistical method must include procedures to control or correct for seasonal as well as temporal correlation in the data.

6.4.1 Autocorrelation

Autocorrelation occurs when measurements collected at different points in time correlate with one another. A minimum of at least fifty samples is recommended to test for autocorrelation. Constituents will be analyzed for autocorrelation as additional sampling is conducted in order to determine if samples are autocorrelated.

6.4.2 Seasonality

Constituents in groundwater at background well locations may experience predictable recurring increases and decreases in concentrations, termed seasonality. The small data set, eleven samples total (1 winter, 3 spring, 4 summer, and 3 fall), does not allow for accurate statistical analysis of seasonality. A minimum of eight samples per sampled season (winter, summer, and fall) is required to test for seasonal differences but at least twenty samples per season are recommended in order to deseasonalize the data. Constituents will be analyzed for seasonality using the Kruskal-Wallis, ANOVA and Log ANOVA tests as additional sampling is conducted in order to determine if samples are affected by seasonality.

6.5 Trends

A key assumption regarding background is constituent concentrations in groundwater should demonstrate stationary conditions through time, free of any trends. Constituents which follow a parametric distribution were analyzed for trends within the data set using a Maximum Likelihood Estimate (MLE) regression. For those that showed statistically significant upwards or downwards trends, trends were checked against results using piecewise linear-linear and a piecewise linear-linear-linear analyses as a visual aid. The linear-linear regression assumes and identifies one structural break within the time series, and the linear-linear-linear regression assumes two structural breaks within the time series.

The Mann-Kendall was used to analyze linear trends within data sets that do not adhere to a specific distribution model (i.e., nonparametric).

The MLE can be applied to data sets that can be fitted to a specific distribution model, do not demonstrate seasonality and contain NDs. MLE results for those constituents or physical parameters with sufficient number of detected values are depicted in **Table 4**.

The MLE regressions depict an increasing trends for barium and radium-228 and a decreasing trend for sulfate (as SO₄). The piecewise regression analyses did not show any additional trends. Based on lack of correlation between trend tests, the small sample size (11) and condensed range of data, the predicted MLE regression trends are considered preliminary and require further statistical analysis with a larger data set.

Table 4. Maximum Likelihood Estimates (MLE) Regression							
Parameter	Unit	N	No. BDL	% BDL	Slope	P-value	Trend
Appendix III							
Boron	mg/l	10	0	0%	-0.000013	0.9	↔
Calcium	mg/l	11	0	0%	0.00028	0.5	↔
pH (lab)	su	11	0	0%	0.0000029	0.9	↔
Sulfate (as SO ₄)	mg/l	11	0	0%	-0.000069	0.02	↓

Table 4. Maximum Likelihood Estimates (MLE) Regression							
Parameter	Unit	N	No. BDL	% BDL	Slope	P-value	Trend
Appendix IV							
Barium	mg/l	11	0	0%	0.00032	<0.001	↑
Cobalt	mg/l	11	1	9%	0.00050	0.2	↔
Molybdenum	mg/l	10	0	0%	0.00014	0.2	↔
Radium-226+228	pci/l	11	1	9%	0.00025	0.2	↔
Selenium	mg/l	11	0	0%	-0.00029	0.2	↔
Additional Parameters							
Radium-228	pci/l	11	4	36%	0.00043	0.03	↑
Total Suspended Solids	mg/l	9	1	11%	-0.00018	0.8	↔

The Mann-Kendall test is suitable for data series with no discernable distributions, no seasonality, and only one value for the MDL. Mann-Kendall results for those constituents or physical parameters with no discernible distributions are depicted in **Table 5**. Cadmium and lithium show a decreasing trend. Based on lack of correlation between trend tests, small sample size (11), and the condensed range of the data, the decreasing trend is considered preliminary and requires further statistical analysis with a larger data set.

Table 5. Mann-Kendall Tests						
Parameter	Unit	N	No. BDL	% BDL	P-value	Trend
Appendix III						
Chloride (as Cl)	mg/l	11	0	0%	0.2	↔
Fluoride	mg/l	11	1	9%	0.2	↔
Total Dissolved Solids	mg/l	11	0	0%	0.4	↔
Appendix IV						
Cadmium	mg/l	11	0	0%	0.02	↓
Fluoride	mg/l	11	1	9%	0.2	↔
Lead	mg/l	9	8	89%	0.3	↔
Lithium	mg/l	11	0	0%	0.03	↓
Thallium	mg/l	10	9	90%	0.1	↔

6.6 Summary of Statistical Analysis

Based on the small sample size, additional sampling is necessary in order to determine the validity of outliers, whether parametric or nonparametric distributions best explain the data sets, and if samples are affected by trends. A summary of statistical results by constituent is depicted in **Table 6**.

The chloride (as Cl), fluoride, and total dissolved solids constituents should be monitored for possible outliers during the next update to background concentrations. Antimony, arsenic, beryllium, cadmium, chloride (as Cl), chromium, fluoride, lead, lithium, mercury, thallium, and total dissolved

solids should be monitored to identify the best data distribution model. Barium, cadmium, lithium, sulfate (as SO₄), and radium-228 should be monitored for an increasing or decreasing trend.

Table 6. Summary of statistical results by constituent			
Parameter	Outliers	Nonparametric Data Distribution	Trends
Appendix III			
Chloride (as Cl)	✓	✓	
Fluoride	✓	✓	
Sulfate (as SO ₄)			✓
Total Dissolved Solids	✓	✓	
Appendix IV			
Antimony		✓	
Arsenic		✓	
Barium	✓		✓
Beryllium		✓	
Cadmium	✓	✓	✓
Chromium, Total		✓	
Fluoride	✓	✓	
Lead		✓	
Lithium		✓	✓
Mercury		✓	
Thallium		✓	
Additional Parameters			
Radium-226		✓	
Radium-228			✓

✓ Constituent was flagged during statistical analysis

6.7 Detection Monitoring Background Threshold Values

For the purpose of estimating BTVs to represent background concentration levels and for future use in evaluating whether samples selected from downgradient wells exhibit statistically significant increases (SSIs) during detection monitoring, all constituents from W-3 considered appropriate for analysis were used.

The upper prediction limits (UPLs) for Appendix III constituents are displayed in **Table 7**. The BTVs for the Hayden site are the upper prediction limit (UPL) values from the background dataset. Upper prediction limits are one of the statistical methods specified under 257.93(f)(3). The details as to which UPL formula was used per constituent are provided in the Data Management and Statistical Procedures Plan (HDR, 2019). Note that for pH, both the UPL and the lower prediction limit (LPL) are of interest as pH values above or below the prediction limits at the downgradient wells can be considered statistically significant. The test significance level per constituent has been estimated such that the cumulative false positive rate over all constituent/downgradient well pair comparisons

is approximately 10 percent. The number of verification samples per constituent has been selected to provide sufficient power to detect an SSI when an SSI has occurred conditional to the background sample size, its distributional properties, and the total number of statistical test comparisons. The UPL BTVs are used to evaluate detection monitoring results of Appendix III constituents sampled at three downgradient wells for SSIs.

Table 7. Background threshold values for detection monitoring for each Appendix III constituent at Hayden Station							
Constituent	Unit	N	No. BDL	% BDL	Statistical Method	No. of Verification Samples	UPLs /BTVs
Boron	mg/l	10	0	0%	Parametric	1	1.01
Calcium	mg/l	11	0	0%	Parametric	1	545
Chloride (as Cl)	mg/l	11	0	0%	Nonparametric	3	200
Fluoride	mg/l	10	1	10%	Parametric	1	0.872
pH (lab) (LPL)	su	11	0	0%	Parametric	1	7.29
pH (lab) (UPL)	su	11	0	0%	Parametric	1	7.85
Sulfate (as SO ₄)	mg/l	11	0	0%	Parametric	1	8,411
Total Dissolved Solids	mg/l	11	0	0%	Nonparametric	3	17,000

6.8 Groundwater Protection Standards for Assessment Monitoring

The upper tolerance limits (UTLs) for Appendix IV constituents are displayed in **Table 8**. The Unified Guidance has recommended that the UTL be used as a fixed value similar to a groundwater protection standard (GPS) where a GPS or maximum contaminant level does not exist for the constituent at the location (USEPA, 2009). The CCR requires that if no standard exists, then the background concentration is used (see parts 257.95 (d)(2), 257.95 (h) of the CCR Rule). The UTLs are used during assessment monitoring for CCR Rule implementation.

With the continued semi-annual monitoring sampling events at the Hayden site, results of additional samples from W-3 should be used to supplement the background data set. The statistical analyses detailed above should be reapplied with more background samples.

Table 8. Upper Tolerance Limits with 95% Coverage and 95% Confidence for Appendix III and Appendix IV Constituents in Hayden						
Constituent	Unit	N	No. BDL	% BDL	Statistical Method	UTL
Appendix IV						
Antimony	mg/l	10	10	100%	Nonparametric	0.00750
Arsenic	mg/l	10	10	100%	Nonparametric	0.00410
Barium	mg/l	11	0	0%	Parametric	0.00918
Beryllium	mg/l	10	10	100%	Nonparametric	0.000600

Table 8. Upper Tolerance Limits with 95% Coverage and 95% Confidence for Appendix III and Appendix IV Constituents in Hayden						
Constituent	Unit	N	No. BDL	% BDL	Statistical Method	UTL
Appendix IV						
Cadmium	mg/l	11	0	0%	Nonparametric	0.00120
Chromium, Total	mg/l	10	9	90%	Nonparametric	0.00130
Cobalt	mg/l	11	1	9%	Parametric	0.00616
Fluoride	mg/l	10	1	10%	Parametric	0.862
Lead	mg/l	9	8	89%	Nonparametric	0.000830
Lithium	mg/l	11	0	0%	Nonparametric	1.80
Mercury	mg/l	8	8	100%	Nonparametric	0.000130
Molybdenum	mg/l	10	0	0%	Parametric	0.00402
Radium-226+228	pci/l	11	1	9%	Parametric	1.01
Selenium	mg/l	11	0	0%	Parametric	0.0246
Thallium	mg/l	10	9	90%	Nonparametric	0.0110

6.9 Assessment Monitoring Background Threshold Values

For the purpose of estimating BTVs to represent background concentration levels and for future use in evaluating whether samples selected from downgradient wells exhibit statistically significant increases (SSIs) during assessment monitoring, all appropriate background samples per constituent from W-3 were used.

The UPLs for Appendix III and Appendix IV constituents are displayed in **Table 9**. The assessment monitoring BTVs for the Hayden site are the UPL values from the background sampling. The details as to which UPL formula was used per constituent are provided in the Data Management and Statistical Procedures Plan (HDR, 2018). Note that for pH, both the UPL and the lower prediction limit (LPL) are of interest as pH values above or below the prediction limits at the downgradient wells can be considered statistically significant. The test significance level per constituent has been estimated such that the cumulative false positive rate over all constituent/well pair comparisons is approximately 10 percent. The UPLs as assessment monitoring BTVs are developed to be used during implementation of CCR Rule 257.95(e). They are specifically designed to be applied to the Appendix III and IV constituents sampled at three downgradient wells.

Table 9. Background threshold values for assessment monitoring for each Appendix III & IV constituent at Hayden Station							
Constituent	Unit	N	No. BDL	% BDL	Statistical Method	No. of Verification Samples ¹	UPLs/ BTVs
Appendix III							
Boron	mg/l	10	0	0%	Parametric	1	1.06
Calcium	mg/l	11	0	0%	Parametric	1	591
Chloride (as Cl)	mg/l	11	0	0%	Nonparametric	3	200
Fluoride	mg/l	10	1	10%	Parametric	1	0.970
pH (lab) (LPL)	su	11	0	0%	Parametric	1	7.24
pH (lab) (UPL)	su	11	0	0%	Parametric	1	7.90
Sulfate (as SO ₄)	mg/l	11	0	0%	Parametric	1	8,534
Total Dissolved Solids	mg/l	11	0	0%	Nonparametric	3	17,000
Appendix IV							
Antimony	mg/l	10	10	100%	Nonparametric	na	0.00750
Arsenic	mg/l	10	10	100%	Nonparametric	na	0.00410
Barium	mg/l	11	0	0%	Parametric	1	0.00915
Beryllium	mg/l	10	10	100%	Nonparametric	na	0.000600
Cadmium	mg/l	11	0	0%	Nonparametric	3	0.00120
Chromium, Total	mg/l	10	9	90%	Nonparametric	4	0.00130
Cobalt	mg/l	11	1	9%	Parametric	1	0.00655
Fluoride	mg/l	10	1	10%	Parametric	1	0.970
Lead	mg/l	9	8	89%	Nonparametric	4	0.000830
Lithium	mg/l	11	0	0%	Nonparametric	3	1.80
Mercury	mg/l	8	8	100%	Nonparametric	na	0.000130
Molybdenum	mg/l	10	0	0%	Parametric	1	0.00402
Radium-226+228	pci/l	11	1	9%	Parametric	1	1.09
Selenium	mg/l	11	0	0%	Parametric	1	0.0245
Thallium	mg/l	10	9	90%	Nonparametric	4	0.0110

¹ An 'na' indicates that the double quantification rule (DQR), recommended in the Unified Guidance (page 6-11), should be used as the constituent is 100 percent NDs. The DQR states that a confirmed exceedance is registered if any well-constituent pair in the "100% non-detect" group exhibits quantified measurements in two consecutive sample and resample events". For the application of this rule, observations detected above the MDL are deemed to be quantified measurements.

7.0 References

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

HDR, 2019. Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule. July 19, 2019.

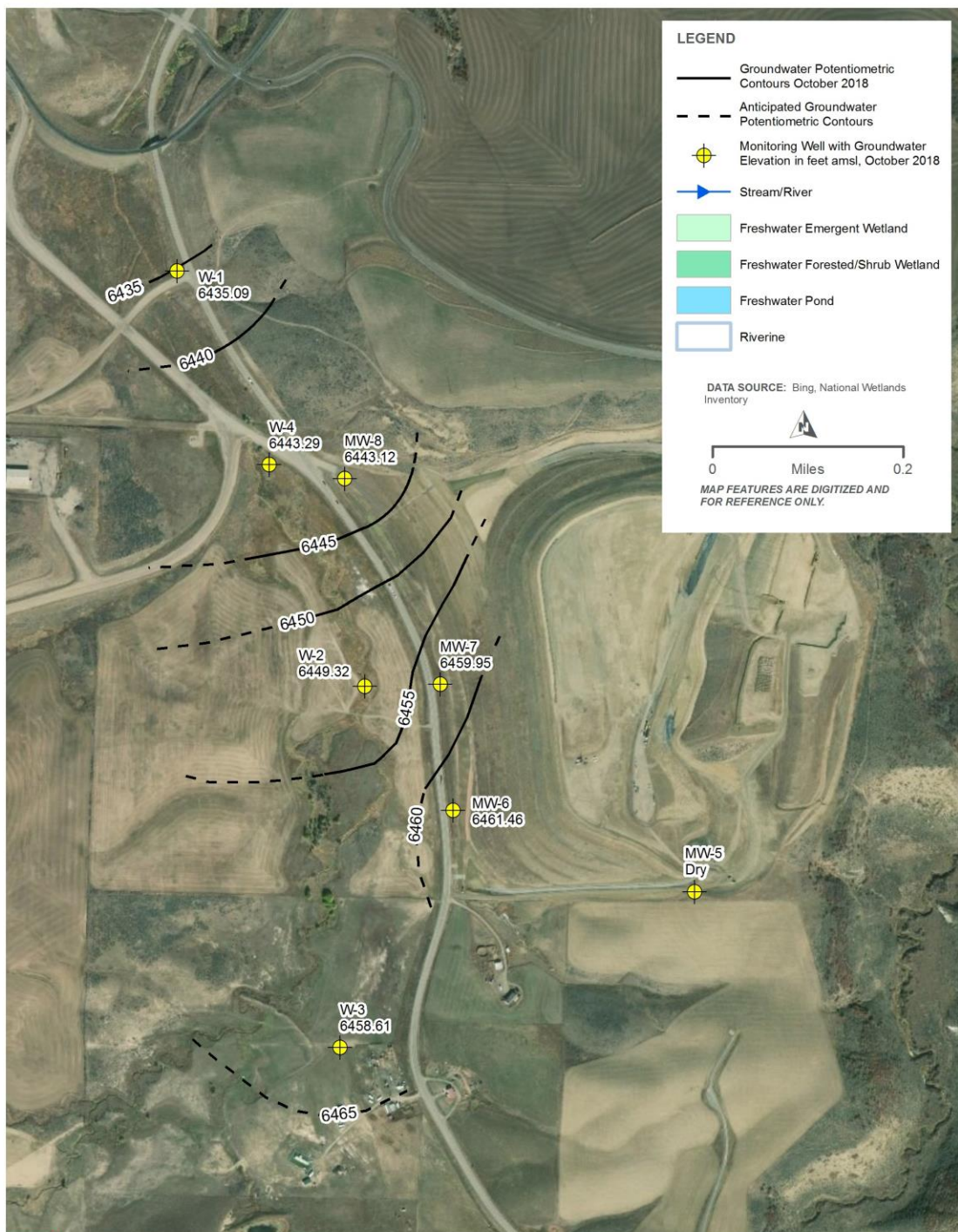
U.S. Environmental Protection Agency (USEPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance. Office of Resource Conservation and Recovery, Program Implementation and Information Division, USEPA, EPA 530/R-09-007, 2009.

Walsh (Walsh Environmental Scientists and Engineers), 2001. Hayden Station Coal Ash Disposal Facility Environmental Monitoring System Work Plan. Xcel Energy, Hayden, Colorado. August 2001.

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

Appendix A

Groundwater Potentiometric Map



HAYDEN POWER STATION
ROUTT COUNTY, CO

Appendix B

Laboratory Reports

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-108402-1

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

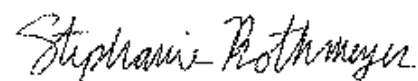
For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

5/8/2018 10:08:50 AM

Stephanie Rothmeyer, Project Manager I

(303)736-0182

stephanie.rothmeyer@testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-108402-1

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.
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.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-108402-1

Job ID: 280-108402-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-108402-1

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 4/12/2018 at 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

TOTAL RECOVERABLE METALS

Samples MW 6 (280-108402-1), MW 7 (280-108402-2), MW 8 (280-108402-3), MW-7D (280-108402-4) and MW-8EB (280-108402-5) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/16/2018 and analyzed on 04/17/2018 and 04/18/2018.

Samples MW 6 (280-108402-1)[5X], MW 7 (280-108402-2)[5X] and MW-7D (280-108402-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW 6 (280-108402-1), MW 7 (280-108402-2), MW 8 (280-108402-3), MW-7D (280-108402-4) and MW-8EB (280-108402-5) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 04/16/2018 and analyzed on 04/18/2018.

Calcium failed the recovery criteria high for the MS and MSD of sample 240-94032-1 in batch 240-323147. 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 DISSOLVED SOLIDS

Samples MW 6 (280-108402-1), MW 7 (280-108402-2), MW 8 (280-108402-3), MW-7D (280-108402-4) and MW-8EB (280-108402-5) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 04/17/2018.

Total Dissolved Solids (TDS) was detected in method blank MB 280-411621/1 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

Case Narrative

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

TestAmerica Job ID: 280-108402-1

Job ID: 280-108402-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

TOTAL SUSPENDED SOLIDS

Samples MW 6 (280-108402-1), MW 7 (280-108402-2), MW 8 (280-108402-3), MW-7D (280-108402-4) and MW-8EB (280-108402-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 04/17/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample MW 6 (280-108402-1). 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 6 (280-108402-1), MW 7 (280-108402-2), MW 8 (280-108402-3), MW-7D (280-108402-4) and MW-8EB (280-108402-5) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 04/13/2018 and 04/20/2018.

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

ANIONS (28 DAYS)

Samples MW 6 (280-108402-1), MW 7 (280-108402-2), MW 8 (280-108402-3), MW-7D (280-108402-4) and MW-8EB (280-108402-5) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 05/06/2018.

Chloride was detected in method blank MB 280-413885/6 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.

Fluoride exceeded the RPD limit for the duplicate of sample 280-108784-10. Refer to the QC report for details.

Samples MW 6 (280-108402-1)[50X], MW 7 (280-108402-2)[2X], MW 7 (280-108402-2)[50X], MW 8 (280-108402-3)[2X], MW 8 (280-108402-3)[50X], MW-7D (280-108402-4)[2X] and MW-7D (280-108402-4)[20X] required dilution prior to analysis to bring the concentration of target analytes within the calibration range. 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.

Detection Summary

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

TestAmerica Job ID: 280-108402-1

Client Sample ID: MW 6

Lab Sample ID: 280-108402-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	37		0.50	0.12	mg/L	5		6010C	Total
Calcium	450		1.0	0.58	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	8.3	HF	0.1	0.1	SU	1		9040B	Recoverable Total/NA
Temperature	18.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	50	B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.29	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	2800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4800	B	40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	5.6		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW 7

Lab Sample ID: 280-108402-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	48		0.50	0.12	mg/L	5		6010C	Total
Calcium	450		1.0	0.58	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Recoverable Total/NA
Temperature	18.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	130	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.23	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	2800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4800	B	40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW 8

Lab Sample ID: 280-108402-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total
Calcium	490		1.0	0.58	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Recoverable Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230	B	6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.20	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4800		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7500	B	40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7D

Lab Sample ID: 280-108402-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	47		0.50	0.12	mg/L	5		6010C	Total
Calcium	460		1.0	0.58	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Recoverable Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	130	B	6.0	0.51	mg/L	2		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-108402-1

Client Sample ID: MW-7D (Continued)

Lab Sample ID: 280-108402-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.23	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3100		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4700	B	40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-8EB

Lab Sample ID: 280-108402-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.088	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	1.4	J B	3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.064	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	0.87	J	5.0	0.23	mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	12	B	10	4.7	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-108402-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

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

Laboratory References:

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

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

Sample Summary

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

TestAmerica Job ID: 280-108402-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-108402-1	MW 6	Water	04/10/18 15:00	04/12/18 12:30
280-108402-2	MW 7	Water	04/10/18 13:35	04/12/18 12:30
280-108402-3	MW 8	Water	04/10/18 16:15	04/12/18 12:30
280-108402-4	MW-7D	Water	04/10/18 13:35	04/12/18 12:30
280-108402-5	MW-8EB	Water	04/10/18 16:30	04/12/18 12:30

Client Sample Results

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

TestAmerica Job ID: 280-108402-1

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

Client Sample ID: MW 6
Date Collected: 04/10/18 15:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	37		0.50	0.12	mg/L	-	04/16/18 15:00	04/18/18 04:38	5

Client Sample ID: MW 7
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	48		0.50	0.12	mg/L	-	04/16/18 15:00	04/18/18 04:42	5

Client Sample ID: MW 8
Date Collected: 04/10/18 16:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 13:26	1

Client Sample ID: MW-7D
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	47		0.50	0.12	mg/L	-	04/16/18 15:00	04/18/18 04:47	5

Client Sample ID: MW-8EB
Date Collected: 04/10/18 16:30
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.088	J	0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 13:36	1

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

Client Sample ID: MW 6
Date Collected: 04/10/18 15:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	450		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 19:39	1

Client Sample ID: MW 7
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	450		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 19:52	1

Client Sample ID: MW 8
Date Collected: 04/10/18 16:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	490		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 19:56	1

Client Sample ID: MW-7D
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	460		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 20:01	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108402-1

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

Client Sample ID: MW-8EB
Date Collected: 04/10/18 16:30
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		04/16/18 15:00	04/18/18 20:05	1

General Chemistry

Client Sample ID: MW 6
Date Collected: 04/10/18 15:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.3	HF	0.1	0.1	SU			04/13/18 21:45	1
Temperature	18.8	HF	1.0	1.0	Degrees C			04/13/18 21:45	1
Chloride	50	B	3.0	0.25	mg/L			05/06/18 11:09	1
Fluoride	0.29	J	0.50	0.060	mg/L			05/06/18 11:09	1
Sulfate	2800		250	12	mg/L			05/06/18 22:44	50
Total Dissolved Solids (TDS)	4800	B	40	19	mg/L			04/17/18 12:41	1
Total Suspended Solids	5.6		4.0	1.1	mg/L			04/17/18 09:04	1

Client Sample ID: MW 7
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			04/13/18 21:49	1
Temperature	18.8	HF	1.0	1.0	Degrees C			04/13/18 21:49	1
Chloride	130	B	6.0	0.51	mg/L			05/06/18 11:32	2
Fluoride	0.23	J	1.0	0.12	mg/L			05/06/18 11:32	2
Sulfate	2800		250	12	mg/L			05/06/18 23:06	50
Total Dissolved Solids (TDS)	4800	B	40	19	mg/L			04/17/18 12:41	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			04/17/18 09:04	1

Client Sample ID: MW 8
Date Collected: 04/10/18 16:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-3
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			04/13/18 21:54	1
Temperature	19.1	HF	1.0	1.0	Degrees C			04/13/18 21:54	1
Chloride	230	B	6.0	0.51	mg/L			05/06/18 11:54	2
Fluoride	0.20	J	1.0	0.12	mg/L			05/06/18 11:54	2
Sulfate	4800		250	12	mg/L			05/06/18 23:29	50
Total Dissolved Solids (TDS)	7500	B	40	19	mg/L			04/17/18 12:41	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			04/17/18 09:04	1

Client Sample ID: MW-7D
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			04/13/18 21:58	1
Temperature	19.1	HF	1.0	1.0	Degrees C			04/13/18 21:58	1
Chloride	130	B	6.0	0.51	mg/L			05/06/18 12:17	2
Fluoride	0.23	J	1.0	0.12	mg/L			05/06/18 12:17	2
Sulfate	3100		100	4.6	mg/L			05/06/18 12:39	20
Total Dissolved Solids (TDS)	4700	B	40	19	mg/L			04/17/18 12:41	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108402-1

General Chemistry (Continued)

Client Sample ID: MW-7D
Date Collected: 04/10/18 13:35
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			04/17/18 09:04	1

Client Sample ID: MW-8EB
Date Collected: 04/10/18 16:30
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU			04/20/18 14:32	1
Temperature	19.2	HF	1.0	1.0	Degrees C			04/20/18 14:32	1
Chloride	1.4	J B	3.0	0.25	mg/L			05/06/18 13:02	1
Fluoride	0.064	J	0.50	0.060	mg/L			05/06/18 13:02	1
Sulfate	0.87	J	5.0	0.23	mg/L			05/06/18 13:02	1
Total Dissolved Solids (TDS)	12	B	10	4.7	mg/L			04/17/18 12:41	1
Total Suspended Solids	ND		4.0	1.1	mg/L			04/17/18 09:04	1

QC Sample Results

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

TestAmerica Job ID: 280-108402-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-322686/1-A
Matrix: Water
Analysis Batch: 322823

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		04/16/18 15:00	04/17/18 12:34	1

Lab Sample ID: LCS 240-322686/2-A
Matrix: Water
Analysis Batch: 322823

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-322686/1-A
Matrix: Water
Analysis Batch: 323147

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		04/16/18 15:00	04/18/18 19:03	1

Lab Sample ID: LCS 240-322686/3-A
Matrix: Water
Analysis Batch: 323147

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	10.5		mg/L		105	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-411327/4
Matrix: Water
Analysis Batch: 411327

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 280-412143/4
Matrix: Water
Analysis Batch: 412143

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-108402-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-413885/6

Matrix: Water

Analysis Batch: 413885

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.16	J	3.0	0.25	mg/L			05/06/18 10:47	1
Fluoride	ND		0.50	0.060	mg/L			05/06/18 10:47	1
Sulfate	ND		5.0	0.23	mg/L			05/06/18 10:47	1

Lab Sample ID: LCS 280-413885/4

Matrix: Water

Analysis Batch: 413885

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	95.7		mg/L		96	90 - 110
Fluoride	5.00	4.84		mg/L		97	90 - 110
Sulfate	100	95.6		mg/L		96	90 - 110

Lab Sample ID: LCSD 280-413885/5

Matrix: Water

Analysis Batch: 413885

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	95.9		mg/L		96	90 - 110	0	10
Fluoride	5.00	4.88		mg/L		98	90 - 110	1	10
Sulfate	100	95.4		mg/L		95	90 - 110	0	10

Lab Sample ID: MRL 280-413885/3

Matrix: Water

Analysis Batch: 413885

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	2.88	J	mg/L		115	50 - 150
Fluoride	0.200	0.243	J	mg/L		121	50 - 150
Sulfate	2.50	2.87	J	mg/L		115	50 - 150

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

Lab Sample ID: MB 280-411621/1

Matrix: Water

Analysis Batch: 411621

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)	8.00	J	10	4.7	mg/L			04/17/18 12:41	1

Lab Sample ID: LCS 280-411621/2

Matrix: Water

Analysis Batch: 411621

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-108402-1

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

Lab Sample ID: LCSD 280-411621/3

Matrix: Water

Analysis Batch: 411621

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)	500	492		mg/L	-	98	86 - 110	2	20

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

Lab Sample ID: MB 280-411548/1

Matrix: Water

Analysis Batch: 411548

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	-		04/17/18 09:04	1

Lab Sample ID: LCS 280-411548/2

Matrix: Water

Analysis Batch: 411548

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids	100	88.0		mg/L	-	88	86 - 114		

Lab Sample ID: LCSD 280-411548/3

Matrix: Water

Analysis Batch: 411548

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	93.2		mg/L	-	93	86 - 114	6	20

Lab Sample ID: 280-108402-1 DU

Matrix: Water

Analysis Batch: 411548

Client Sample ID: MW 6

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D		RPD	RPD Limit
Total Suspended Solids	5.6		4.80	F5	mg/L	-		15	10

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-108402-1

Metals

Prep Batch: 322686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total Recoverable	Water	3005A	
280-108402-2	MW 7	Total Recoverable	Water	3005A	
280-108402-3	MW 8	Total Recoverable	Water	3005A	
280-108402-4	MW-7D	Total Recoverable	Water	3005A	
280-108402-5	MW-8EB	Total Recoverable	Water	3005A	
MB 240-322686/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-322686/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-322686/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 322823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total Recoverable	Water	6010C	322686
280-108402-2	MW 7	Total Recoverable	Water	6010C	322686
280-108402-3	MW 8	Total Recoverable	Water	6010C	322686
280-108402-4	MW-7D	Total Recoverable	Water	6010C	322686
280-108402-5	MW-8EB	Total Recoverable	Water	6010C	322686
MB 240-322686/1-A	Method Blank	Total Recoverable	Water	6010C	322686
LCS 240-322686/2-A	Lab Control Sample	Total Recoverable	Water	6010C	322686

Analysis Batch: 323147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total Recoverable	Water	6020A	322686
280-108402-2	MW 7	Total Recoverable	Water	6020A	322686
280-108402-3	MW 8	Total Recoverable	Water	6020A	322686
280-108402-4	MW-7D	Total Recoverable	Water	6020A	322686
280-108402-5	MW-8EB	Total Recoverable	Water	6020A	322686
MB 240-322686/1-A	Method Blank	Total Recoverable	Water	6020A	322686
LCS 240-322686/3-A	Lab Control Sample	Total Recoverable	Water	6020A	322686

General Chemistry

Analysis Batch: 411327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total/NA	Water	9040B	
280-108402-2	MW 7	Total/NA	Water	9040B	
280-108402-3	MW 8	Total/NA	Water	9040B	
280-108402-4	MW-7D	Total/NA	Water	9040B	
LCS 280-411327/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 411548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total/NA	Water	SM 2540D	
280-108402-2	MW 7	Total/NA	Water	SM 2540D	
280-108402-3	MW 8	Total/NA	Water	SM 2540D	
280-108402-4	MW-7D	Total/NA	Water	SM 2540D	
280-108402-5	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-411548/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-411548/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-411548/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-108402-1 DU	MW 6	Total/NA	Water	SM 2540D	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-108402-1

General Chemistry (Continued)

Analysis Batch: 411621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total/NA	Water	SM 2540C	
280-108402-2	MW 7	Total/NA	Water	SM 2540C	
280-108402-3	MW 8	Total/NA	Water	SM 2540C	
280-108402-4	MW-7D	Total/NA	Water	SM 2540C	
280-108402-5	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-411621/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-411621/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-411621/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 412143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-5	MW-8EB	Total/NA	Water	9040B	
LCS 280-412143/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 413885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108402-1	MW 6	Total/NA	Water	9056A	
280-108402-1	MW 6	Total/NA	Water	9056A	
280-108402-2	MW 7	Total/NA	Water	9056A	
280-108402-2	MW 7	Total/NA	Water	9056A	
280-108402-3	MW 8	Total/NA	Water	9056A	
280-108402-3	MW 8	Total/NA	Water	9056A	
280-108402-4	MW-7D	Total/NA	Water	9056A	
280-108402-4	MW-7D	Total/NA	Water	9056A	
280-108402-5	MW-8EB	Total/NA	Water	9056A	
MB 280-413885/6	Method Blank	Total/NA	Water	9056A	
LCS 280-413885/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-413885/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-413885/3	Lab Control Sample	Total/NA	Water	9056A	

Lab Chronicle

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

TestAmerica Job ID: 280-108402-1

Client Sample ID: MW 6

Date Collected: 04/10/18 15:00

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-1

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			322823	04/18/18 04:38	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 19:39	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 21:45	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	413885	05/06/18 11:09	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	413885	05/06/18 22:44	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411621	04/17/18 12:41	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	411548	04/17/18 09:04	JAP	TAL DEN

Client Sample ID: MW 7

Date Collected: 04/10/18 13:35

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-2

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			322823	04/18/18 04:42	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 19:52	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 21:49	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	413885	05/06/18 11:32	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	413885	05/06/18 23:06	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411621	04/17/18 12:41	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	411548	04/17/18 09:04	JAP	TAL DEN

Client Sample ID: MW 8

Date Collected: 04/10/18 16:15

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-3

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 13:26	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 19:56	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 21:54	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	413885	05/06/18 11:54	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	413885	05/06/18 23:29	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411621	04/17/18 12:41	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	411548	04/17/18 09:04	JAP	TAL DEN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-108402-1

Client Sample ID: MW-7D

Date Collected: 04/10/18 13:35

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-4

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			322823	04/18/18 04:47	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:01	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 21:58	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	413885	05/06/18 12:17	CCJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	413885	05/06/18 12:39	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411621	04/17/18 12:41	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	411548	04/17/18 09:04	JAP	TAL DEN

Client Sample ID: MW-8EB

Date Collected: 04/10/18 16:30

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108402-5

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 13:36	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:05	DSH	TAL CAN
Total/NA	Analysis	9040B		1			412143	04/20/18 14:32	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	413885	05/06/18 13:02	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	411621	04/17/18 12:41	JAP	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	411548	04/17/18 09:04	JAP	TAL DEN

Laboratory References:

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-108402-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

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

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

TestAmerica Denver

124/C12.5

Chain of Custody Record



TestAmerica

The Laboratory for Environmental Testing

Client Information (Sub Contract Lab) Company: TestAmerica Laboratories, Inc. Address: 4101 Shufiel Street NW City: North Canton State: OH 44720 Phone: 330-497-5366 (Tel) 330-497-0772 (Fax) Email:		Supplier: Rollmeyer, Stephanie K. Lat. Fax: Rollmeyer, Stephanie K. E-Mail: stephanie.rollmeyer@testamericadnc.com Phone:		CCR No: 280-453734-1 Page: Page 1 of 1 Date of Origin: Colorado Job #: 280-108402-4 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - 30% Acid E - NaHSO ₄ F - MeOH G - Ascorbic Acid H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Due Date Requested: 5/7/2018 TAT Requested (days):		Analysis Requested 5010C/5005A (MOD) 13 Total Metals (Wet/Seal Cell) 5020A/5005A (MOD) 13 Total Metals (Wet/Seal Cell)			
Sample Identification - Client ID (Lab ID) MW 6 (280-108402-1) MW 7 (280-108402-2) MW 8 (280-108402-3) MW 7D (280-108402-4) MW 8EB (280-108402-5)		Sample Date 4/10/18 4/10/18 4/10/18 4/10/18 4/10/18		Sample Time 15:00 Mountain 13:35 Mountain 16:15 Mountain 13:35 Mountain 16:30 Mountain	
Sample Type (C=Comp, G=Grab) Water Water Water Water Water		Matrix (W=Water, B=Bottle, G=Grab, etc.) Water Water Water Water Water		Field Filtered Sample (Yes or No) X X X X X	
Perform MS/MSD (Yes or No) X X X X X		5010C/5005A (MOD) 13 Total Metals (Wet/Seal Cell) X X X X X		5020A/5005A (MOD) 13 Total Metals (Wet/Seal Cell) X X X X X	
Total Number of Containers 520		Special Instructions/Note: Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell			

Note: Since laboratory accreditation are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon test accreditation 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 analytical method being analyzed, the samples must be shipped back to the TestAmerica Laboratory for other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If not requested accreditation, are returned to date, return the signed Chain of Custody, attesting to said compliance to TestAmerica Laboratories, Inc.

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 Special Instructions/OC Requirements:	
Primary Deliverable Rank: 4		Weight of Shipment:	
Requested by: <i>Stephanie Rollmeyer</i> Date: 4/13/18 16:45 Company:		Received by: <i>Stephanie Rollmeyer</i> Date: 4/14/18 11:45 Company: TAC	
Requested by: Date:		Received by: Date:	
Custody Seal Intact Yes A No		Custody Seal No	

TestAmerica Canton Sample Receipt Form/Narrative Canton Facility				Login # : _____
Client <u>TA Denver</u>		Site Name _____		Cooler unpacked by: <u>DSO</u>
Cooler Received on <u>4/14/18</u>		Opened on <u>4/16/18</u>		
FedEx: 1 st Grd <u>Exp</u> UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____				
Receipt After-hours: Drop-off Date/Time _____				Storage Location _____
TestAmerica Cooler # <u>TA</u>		Foam Box _____	Client Cooler _____	Box Other _____
Packing material used: Bubble Wrap _____ Foam _____ Plastic Bag _____ None _____ Other _____				
COOLANT: Wet Ice _____ Blue Ice _____ Dry Ice _____ Water <u>None</u>				
☐ See Multiple Cooler Form				
1. Cooler temperature upon receipt.				
IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. <u>12.4</u> °C Corrected Cooler Temp. <u>2.5</u> °C				
IR GUN #36 (CF +0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C				
IR GUN # 627 (CF -1.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C				
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u>				
-Were the seals on the outside of the cooler(s) signed & dated? <u>Yes</u> No NA				
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/McHg)? <u>Yes</u> No NA				
-Were tamper/custody seals intact and uncompromised? <u>Yes</u> No NA				
3. Shippers' packing slip attached to the cooler(s)? <u>Yes</u> No				
4. Did custody papers accompany the sample(s)? <u>Yes</u> No				
5. Were the custody papers relinquished & signed in the appropriate place? <u>Yes</u> No				
6. Was/were the person(s) who collected the samples clearly identified on the COC? <u>Yes</u> No				
7. Did all bottles arrive in good condition (Unbroken)? <u>Yes</u> No				
8. Could all bottle labels be reconciled with the COC? <u>Yes</u> No				
9. Were correct bottle(s) used for the test(s) indicated? <u>Yes</u> No				
10. Sufficient quantity received to perform indicated analyses? <u>Yes</u> No				
11. Are these work share samples?				
If yes, Questions 12-16 have been checked at the originating laboratory.				
12. Were all preserved sample(s) at the correct pH upon receipt? <u>Yes</u> No NA pH Strip Lot# <u>HC732776</u>				
13. Were VOAs on the COC? <u>Yes</u> No				
14. Were air bubbles >6 mm in any VOA vials? <u>Yes</u> No NA Larger than this.				
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ <u>Yes</u> No				
16. Was a LL Hg or Mc Hg trip blank present? <u>Yes</u> No				
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____				
Concerning _____				

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

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: 280-108402-1

Login Number: 108402

List Number: 1

Creator: Blogin, Nick C

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-108405-1

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

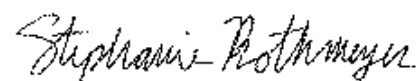
For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

5/9/2018 11:14:24 AM

Stephanie Rothmeyer, Project Manager I

(303)736-0182

stephanie.rothmeyer@testamericainc.com

LINKS

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results through

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www.testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-108405-1

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-108405-1

Job ID: 280-108405-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-108405-1

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 4/12/2018 at 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7° C.

TOTAL RECOVERABLE METALS

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/16/2018 and analyzed on 04/17/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 04/16/2018 and analyzed on 04/18/2018.

Calcium failed the recovery criteria high for the MS and MSD of sample 240-94032-1 in batch 240-323147. 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 DISSOLVED SOLIDS

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 04/18/2018.

Constant weight was not achieved after 4 drying cycles for the following sample: W-3 (280-108405-3).

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

CORROSIVITY (PH)

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 04/13/2018 and 04/20/2018.

Case Narrative

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

TestAmerica Job ID: 280-108405-1

Job ID: 280-108405-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

ANIONS (28 DAYS)

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 05/07/2018 and 05/08/2018.

Samples W-1 (280-108405-1)[20X], W-2 (280-108405-2)[5X], W-2 (280-108405-2)[50X], W-3 (280-108405-3)[5X], W-3 (280-108405-3)[50X], W-4 (280-108405-4)[10X], W-4 (280-108405-4)[100X], W-2D (280-108405-5)[5X] and W-2D (280-108405-5)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Detection Summary

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

TestAmerica Job ID: 280-108405-1

Client Sample ID: W-1

Lab Sample ID: 280-108405-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.66		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	380		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	45		3.0	0.25	mg/L	1		9056A	Total/NA
Fluoride	0.29	J	0.50	0.060	mg/L	1		9056A	Total/NA
Sulfate	2600		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4100		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-108405-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.0		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	410		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	85		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.45	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	4500		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	6500		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-108405-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.86		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	410		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.45	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	7900		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	12000		100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-108405-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	430		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	380		30	2.5	mg/L	10		9056A	Total/NA
Sulfate	13000		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	19000		100	47	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-108405-1

Client Sample ID: W-2D

Lab Sample ID: 280-108405-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.0		0.10	0.023	mg/L	1		6010C	Total
Calcium	410		1.0	0.58	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Recoverable Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	84		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.43	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	4500		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	6500		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-1EB

Lab Sample ID: 280-108405-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.028	J	0.10	0.023	mg/L	1		6010C	Total
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU	1		9040B	Recoverable Total/NA
Temperature	19.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	0.39	J	3.0	0.25	mg/L	1		9056A	Total/NA
Sulfate	0.71	J	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-108405-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

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

Laboratory References:

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

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

Sample Summary

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

TestAmerica Job ID: 280-108405-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-108405-1	W-1	Water	04/11/18 12:50	04/12/18 12:30
280-108405-2	W-2	Water	04/11/18 11:10	04/12/18 12:30
280-108405-3	W-3	Water	04/11/18 16:25	04/12/18 12:30
280-108405-4	W-4	Water	04/11/18 14:15	04/12/18 12:30
280-108405-5	W-2D	Water	04/11/18 11:10	04/12/18 12:30
280-108405-6	W-1EB	Water	04/11/18 13:00	04/12/18 12:30

Client Sample Results

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

TestAmerica Job ID: 280-108405-1

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

Client Sample ID: W-1
Date Collected: 04/11/18 12:50
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.66		0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 13:41	1

Client Sample ID: W-2
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.0		0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 13:45	1

Client Sample ID: W-3
Date Collected: 04/11/18 16:25
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.86		0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 13:50	1

Client Sample ID: W-4
Date Collected: 04/11/18 14:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 13:55	1

Client Sample ID: W-2D
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.0		0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 14:00	1

Client Sample ID: W-1EB
Date Collected: 04/11/18 13:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.028	J	0.10	0.023	mg/L	-	04/16/18 15:00	04/17/18 14:05	1

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

Client Sample ID: W-1
Date Collected: 04/11/18 12:50
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	380		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 20:10	1

Client Sample ID: W-2
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	410		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 20:14	1

Client Sample ID: W-3
Date Collected: 04/11/18 16:25
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	410		1.0	0.58	mg/L	-	04/16/18 15:00	04/18/18 20:19	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108405-1

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

Client Sample ID: W-4
Date Collected: 04/11/18 14:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	430		1.0	0.58	mg/L		04/16/18 15:00	04/18/18 20:23	1

Client Sample ID: W-2D
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	410		1.0	0.58	mg/L		04/16/18 15:00	04/18/18 20:28	1

Client Sample ID: W-1EB
Date Collected: 04/11/18 13:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		04/16/18 15:00	04/18/18 20:32	1

General Chemistry

Client Sample ID: W-1
Date Collected: 04/11/18 12:50
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1
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			04/13/18 22:09	1
Temperature	19.1	HF	1.0	1.0	Degrees C			04/13/18 22:09	1
Chloride	45		3.0	0.25	mg/L			05/07/18 18:01	1
Fluoride	0.29	J	0.50	0.060	mg/L			05/07/18 18:01	1
Sulfate	2600		100	4.6	mg/L			05/08/18 02:37	20
Total Dissolved Solids (TDS)	4100		40	19	mg/L			04/18/18 08:31	1

Client Sample ID: W-2
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2
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			04/13/18 22:13	1
Temperature	19.0	HF	1.0	1.0	Degrees C			04/13/18 22:13	1
Chloride	85		15	1.3	mg/L			05/07/18 19:12	5
Fluoride	0.45	J	2.5	0.30	mg/L			05/07/18 19:12	5
Sulfate	4500		250	12	mg/L			05/08/18 02:55	50
Total Dissolved Solids (TDS)	6500		40	19	mg/L			04/18/18 08:31	1

Client Sample ID: W-3
Date Collected: 04/11/18 16:25
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3
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			04/13/18 22:19	1
Temperature	19.0	HF	1.0	1.0	Degrees C			04/13/18 22:19	1
Chloride	190		15	1.3	mg/L			05/07/18 19:48	5
Fluoride	0.45	J	2.5	0.30	mg/L			05/07/18 19:48	5
Sulfate	7900		250	12	mg/L			05/08/18 03:13	50
Total Dissolved Solids (TDS)	12000		100	47	mg/L			04/18/18 08:31	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108405-1

General Chemistry

Client Sample ID: W-4
Date Collected: 04/11/18 14:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			04/13/18 22:34	1
Temperature	19.3	HF	1.0	1.0	Degrees C			04/13/18 22:34	1
Chloride	380		30	2.5	mg/L			05/07/18 20:23	10
Fluoride	ND		5.0	0.60	mg/L			05/07/18 20:23	10
Sulfate	13000		500	23	mg/L			05/08/18 03:30	100
Total Dissolved Solids (TDS)	19000		100	47	mg/L			04/18/18 08:31	1

Client Sample ID: W-2D
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			04/13/18 22:39	1
Temperature	19.1	HF	1.0	1.0	Degrees C			04/13/18 22:39	1
Chloride	84		15	1.3	mg/L			05/07/18 20:59	5
Fluoride	0.43	J	2.5	0.30	mg/L			05/07/18 20:59	5
Sulfate	4500		250	12	mg/L			05/08/18 03:48	50
Total Dissolved Solids (TDS)	6500		40	19	mg/L			04/18/18 08:31	1

Client Sample ID: W-1EB
Date Collected: 04/11/18 13:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	5.8	HF	0.1	0.1	SU			04/20/18 14:35	1
Temperature	19.1	HF	1.0	1.0	Degrees C			04/20/18 14:35	1
Chloride	0.39	J	3.0	0.25	mg/L			05/07/18 21:34	1
Fluoride	ND		0.50	0.060	mg/L			05/07/18 21:34	1
Sulfate	0.71	J	5.0	0.23	mg/L			05/07/18 21:34	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			04/18/18 08:31	1

QC Sample Results

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

TestAmerica Job ID: 280-108405-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-322686/1-A
Matrix: Water
Analysis Batch: 322823

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		04/16/18 15:00	04/17/18 12:34	1

Lab Sample ID: LCS 240-322686/2-A
Matrix: Water
Analysis Batch: 322823

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-322686/1-A
Matrix: Water
Analysis Batch: 323147

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		04/16/18 15:00	04/18/18 19:03	1

Lab Sample ID: LCS 240-322686/3-A
Matrix: Water
Analysis Batch: 323147

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 322686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	10.5		mg/L		105	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-411327/4
Matrix: Water
Analysis Batch: 411327

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 280-412143/4
Matrix: Water
Analysis Batch: 412143

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-108405-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-413962/6

Matrix: Water

Analysis Batch: 413962

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			05/07/18 12:50	1
Fluoride	ND		0.50	0.060	mg/L			05/07/18 12:50	1
Sulfate	ND		5.0	0.23	mg/L			05/07/18 12:50	1

Lab Sample ID: LCS 280-413962/4

Matrix: Water

Analysis Batch: 413962

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	5.17		mg/L		103	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-413962/5

Matrix: Water

Analysis Batch: 413962

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	5.22		mg/L		104	90 - 110	1	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-413962/3

Matrix: Water

Analysis Batch: 413962

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.64	J	mg/L		105	50 - 150
Fluoride	0.200	0.132	J	mg/L		66	50 - 150
Sulfate	2.50	2.67	J	mg/L		107	50 - 150

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

Lab Sample ID: MB 280-411718/1

Matrix: Water

Analysis Batch: 411718

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			04/18/18 08:31	1

Lab Sample ID: LCS 280-411718/2

Matrix: Water

Analysis Batch: 411718

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	492		mg/L		98	86 - 110

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-108405-1

Metals

Prep Batch: 322686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total Recoverable	Water	3005A	
280-108405-2	W-2	Total Recoverable	Water	3005A	
280-108405-3	W-3	Total Recoverable	Water	3005A	
280-108405-4	W-4	Total Recoverable	Water	3005A	
280-108405-5	W-2D	Total Recoverable	Water	3005A	
280-108405-6	W-1EB	Total Recoverable	Water	3005A	
MB 240-322686/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-322686/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-322686/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 322823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total Recoverable	Water	6010C	322686
280-108405-2	W-2	Total Recoverable	Water	6010C	322686
280-108405-3	W-3	Total Recoverable	Water	6010C	322686
280-108405-4	W-4	Total Recoverable	Water	6010C	322686
280-108405-5	W-2D	Total Recoverable	Water	6010C	322686
280-108405-6	W-1EB	Total Recoverable	Water	6010C	322686
MB 240-322686/1-A	Method Blank	Total Recoverable	Water	6010C	322686
LCS 240-322686/2-A	Lab Control Sample	Total Recoverable	Water	6010C	322686

Analysis Batch: 323147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total Recoverable	Water	6020A	322686
280-108405-2	W-2	Total Recoverable	Water	6020A	322686
280-108405-3	W-3	Total Recoverable	Water	6020A	322686
280-108405-4	W-4	Total Recoverable	Water	6020A	322686
280-108405-5	W-2D	Total Recoverable	Water	6020A	322686
280-108405-6	W-1EB	Total Recoverable	Water	6020A	322686
MB 240-322686/1-A	Method Blank	Total Recoverable	Water	6020A	322686
LCS 240-322686/3-A	Lab Control Sample	Total Recoverable	Water	6020A	322686

General Chemistry

Analysis Batch: 411327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total/NA	Water	9040B	
280-108405-2	W-2	Total/NA	Water	9040B	
280-108405-3	W-3	Total/NA	Water	9040B	
280-108405-4	W-4	Total/NA	Water	9040B	
280-108405-5	W-2D	Total/NA	Water	9040B	
LCS 280-411327/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 411718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total/NA	Water	SM 2540C	
280-108405-2	W-2	Total/NA	Water	SM 2540C	
280-108405-3	W-3	Total/NA	Water	SM 2540C	
280-108405-4	W-4	Total/NA	Water	SM 2540C	
280-108405-5	W-2D	Total/NA	Water	SM 2540C	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-108405-1

General Chemistry (Continued)

Analysis Batch: 411718 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-6	W-1EB	Total/NA	Water	SM 2540C	
MB 280-411718/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-411718/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 412143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-6	W-1EB	Total/NA	Water	9040B	
LCS 280-412143/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 413962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total/NA	Water	9056A	
280-108405-1	W-1	Total/NA	Water	9056A	
280-108405-2	W-2	Total/NA	Water	9056A	
280-108405-2	W-2	Total/NA	Water	9056A	
280-108405-3	W-3	Total/NA	Water	9056A	
280-108405-3	W-3	Total/NA	Water	9056A	
280-108405-4	W-4	Total/NA	Water	9056A	
280-108405-4	W-4	Total/NA	Water	9056A	
280-108405-5	W-2D	Total/NA	Water	9056A	
280-108405-5	W-2D	Total/NA	Water	9056A	
280-108405-6	W-1EB	Total/NA	Water	9056A	
MB 280-413962/6	Method Blank	Total/NA	Water	9056A	
LCS 280-413962/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-413962/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-413962/3	Lab Control Sample	Total/NA	Water	9056A	

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-108405-1

Client Sample ID: W-1

Date Collected: 04/11/18 12:50

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 13:41	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:10	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 22:09	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	413962	05/07/18 18:01	CCJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	413962	05/08/18 02:37	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411718	04/18/18 08:31	JAP	TAL DEN

Client Sample ID: W-2

Date Collected: 04/11/18 11:10

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 13:45	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:14	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 22:13	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	413962	05/07/18 19:12	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	413962	05/08/18 02:55	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411718	04/18/18 08:31	JAP	TAL DEN

Client Sample ID: W-3

Date Collected: 04/11/18 16:25

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 13:50	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:19	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 22:19	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	413962	05/07/18 19:48	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	413962	05/08/18 03:13	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	411718	04/18/18 08:31	JAP	TAL DEN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-108405-1

Client Sample ID: W-4

Date Collected: 04/11/18 14:15

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 13:55	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:23	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 22:34	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	413962	05/07/18 20:23	CCJ	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	413962	05/08/18 03:30	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	411718	04/18/18 08:31	JAP	TAL DEN

Client Sample ID: W-2D

Date Collected: 04/11/18 11:10

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 14:00	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:28	DSH	TAL CAN
Total/NA	Analysis	9040B		1			411327	04/13/18 22:39	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	413962	05/07/18 20:59	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	413962	05/08/18 03:48	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	411718	04/18/18 08:31	JAP	TAL DEN

Client Sample ID: W-1EB

Date Collected: 04/11/18 13:00

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6

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	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			322823	04/17/18 14:05	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	322686	04/16/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			323147	04/18/18 20:32	DSH	TAL CAN
Total/NA	Analysis	9040B		1			412143	04/20/18 14:35	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	413962	05/07/18 21:34	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	411718	04/18/18 08:31	JAP	TAL DEN

Laboratory References:

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-108405-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

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

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

TestAmerica Denver

Chain of Custody Record

Client Information Client Contact: Anna Lundin Company: HDR Inc Address: 9761 S. Meridian Blvd Suite 400 City: Englewood State, Zip: CO, 80112 Phone: 720-633-2380 (Tel) Email: anna.lundin@hdrinc.com Project Name: Xcel Energy GW CCR Monitoring - Hayden Site: Colorado		Sample Information Sample: TAVA KENT Phone: 720 933 7496 Lab P/N: Rollmeyer, Stephanie K E-Mail: stephanie.rollmeyer@testamerica.com		CUC No: Page: of Job #	
Due Date Requested: TAT Requested (days): Standard PO #: DEN-001 WO #: Project #: 28014377 SSOW#:		Analysis Requested Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - NaOH G - Ascorbic Acid H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: Preservation Codes: M - Hexane N - None O - AsNaD2 P - Na2O2S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Decehydrate U - Acetone V - MCAA W - pH 4-5 Z - Other (specify)			
Sample Identification Sample Date Sample Time Sample Type (C=Comp, G=grab) Matrix (Water, Sealed, Swab, etc.) Preservation Code (1-7, 9-10, 12-14, 16-17)		Total Number of Containers: Special Instructions/Note:			
W-1	4-11-18	1250	6	Water	
W-2	4-11-18	1110	6	Water	
W-3	4-11-18	1625	6	Water	
W-4	4-11-18	1415	6	Water	
Field Duplicate TW	4-11-18	1110	6	Water	
Equipment Change TW	4-11-18	1300	6	Water	
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown ☐ Radiological 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: TAVA KENT Relinquished by: Relinquished by: Relinquished by:		Date: 4-12-18 Time: 12:30 Received by: Received by: Received by:			
Custody Seals Intact: A Yes ☐ No ☐		Cooler Temperature: 2.8°C - 0.1°F #8 Transferred BB 4/12/18			

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab Info		Carrier Tracking Notes		GOG Inc	
Client Contact Stephanie K. Rottmeyer E-Mail: stephanie.rottmeier@testamerica.com Phone:		Lab ID: 124/C12.5 State of Origin: Colorado Page 1 of 1		Carrier Tracking Notes		GOG Inc 433735-1	
Shipping/Receiving		E-Mail		State of Origin		Page	
TestAmerica Laboratories, Inc. Address: 4101 Shuffel Street NW City: North Canton State, Zip: OH, 44720 Phone: 330-487-9395 (Tel) 330-487-0774 (Fax) Email:		Accreditations Required (See note) DoD ELAP - A2LA		Job # 280-108405-1		Preservation Codes: A - TCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaOH F - MeOH G - Ammonia H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Due Date Requested: 5/7/2018		TAT Requested (days):		Analysis Requested		Total Number of Containers	
Sample Date		Sample Time		Sample Matrix		Special Instructions/Note:	
4/11/18		12:50		Water		SZO	
4/11/18		11:10		Water		Use Collision Cell	
4/11/18		16:25		Water		Use Collision Cell	
4/11/18		14:15		Water		Use Collision Cell	
4/11/18		11:10		Water		Use Collision Cell	
4/11/18		13:00		Water		Use Collision Cell	
4/11/18		Mountain		Water		Use Collision Cell	
Sample Identification - Client ID (Lab ID)		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		6010/3005A (MOD) 13 Total Metals (collision cell)	
W-1 (280-108405-1)		X		X		X	
W-2 (280-108405-2)		X		X		X	
W-3 (280-108405-3)		X		X		X	
W-4 (280-108405-4)		X		X		X	
W-2D (280-108405-5)		X		X		X	
W-1EB (280-108405-6)		X		X		X	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon our subcontracted 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, the sample must be placed back to the TestAmerica laboratory or other institutions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed

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

Primary Deliverable Rank: 4

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/OC Requirements:

Empty Kit Relinquished by: [Signature] Date: 4/13/18

Relinquished by: [Signature] Date: 4/13/18

Relinquished by: [Signature] Date: 4/13/18

Custody Seal No. 3 Yes 3 No

Custody Seal Intact

Cooler Temperature(s) °C and Other Remarks

Company: TAC

Date/Time: 4/14/18 11:45

Date/Time: 4/14/18 11:45

Date/Time: 4/14/18 11:45

Ver: 09/20/2016

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client TA Denver Site Name _____ Cooler unpacked by: DSO
 Cooler Received on 4/14/18 Opened on 4/16/18
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None ☐ See Multiple Cooler Form

1. Cooler temperature upon receipt
 IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. 12.4 °C Corrected Cooler Temp. 12.5 °C
 IR GUN #36 (CF +0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN # 627 (CF -1.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/McHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No

4. Did custody papers accompany the sample(s)? Yes No

5. Were the custody papers relinquished & signed in the appropriate place? Yes No

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No

7. Did all bottles arrive in good condition (Unbroken)? Yes No

8. Could all bottle labels be reconciled with the COC? Yes No

9. Were correct bottle(s) used for the test(s) indicated? Yes No

10. Sufficient quantity received to perform indicated analyses? Yes No

11. Are these work share samples? Yes No

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA

13. Were VOAs on the COC? Yes No

14. Were air bubbles >6 mm in any VOA vials? Yes  Larger than this. Yes No NA

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

16. Was a LL Hg or Me Hg trip blank present? Yes No

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

Concerning _____

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

pH Strip Lot# HC732776

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-108405-1

Login Number: 108405

List Number: 1

Creator: Blogin, Nick C

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-108405-2

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

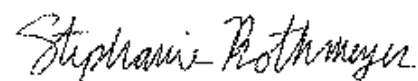
For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

7/2/2018 11:53:00 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 - Hayden

TestAmerica Job ID: 280-108405-2

Qualifiers

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.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-108405-2

Job ID: 280-108405-2

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-108405-2

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 4/12/2018 at 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7° C.

RADIUM-226 (GFPC)

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 06/05/2018 and analyzed on 06/30/2018.

Sample aliquots were reduced due to limited sample volume: W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5), W-1EB (280-108405-6).

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

RADIUM-228

Samples W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 06/05/2018 and analyzed on 06/14/2018.

Radium-228 exceeded the RPD limit for the duplicate of sample 400-154450-1. Refer to the QC report for details.

Sample aliquots were reduced due to limited sample volume: W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5), W-1EB (280-108405-6).

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 W-1 (280-108405-1), W-2 (280-108405-2), W-3 (280-108405-3), W-4 (280-108405-4), W-2D (280-108405-5) and W-1EB (280-108405-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 07/02/2018.

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

Method Summary

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

TestAmerica Job ID: 280-108405-2

Method	Method Description	Protocol	Laboratory
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
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

Sample Summary

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

TestAmerica Job ID: 280-108405-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-108405-1	W-1	Water	04/11/18 12:50	04/12/18 12:30
280-108405-2	W-2	Water	04/11/18 11:10	04/12/18 12:30
280-108405-3	W-3	Water	04/11/18 16:25	04/12/18 12:30
280-108405-4	W-4	Water	04/11/18 14:15	04/12/18 12:30
280-108405-5	W-2D	Water	04/11/18 11:10	04/12/18 12:30
280-108405-6	W-1EB	Water	04/11/18 13:00	04/12/18 12:30

Client Sample Results

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

TestAmerica Job ID: 280-108405-2

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 04/11/18 12:50
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0807	U	0.0659	0.0663	1.00	0.0935	pCi/L	06/05/18 09:17	06/30/18 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					06/05/18 09:17	06/30/18 09:43	1

Client Sample ID: W-2
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.237		0.0962	0.0985	1.00	0.0921	pCi/L	06/05/18 09:17	06/30/18 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					06/05/18 09:17	06/30/18 09:43	1

Client Sample ID: W-3
Date Collected: 04/11/18 16:25
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0349	U	0.0542	0.0543	1.00	0.0942	pCi/L	06/05/18 09:17	06/30/18 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/05/18 09:17	06/30/18 09:43	1

Client Sample ID: W-4
Date Collected: 04/11/18 14:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0861	U	0.0671	0.0676	1.00	0.0945	pCi/L	06/05/18 09:17	06/30/18 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					06/05/18 09:17	06/30/18 09:43	1

Client Sample ID: W-2D
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.190		0.0863	0.0880	1.00	0.0835	pCi/L	06/05/18 09:17	06/30/18 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/05/18 09:17	06/30/18 09:43	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108405-2

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1EB
Date Collected: 04/11/18 13:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0274	U	0.0308	0.0309	1.00	0.0946	pCi/L	06/05/18 09:17	06/30/18 09:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					06/05/18 09:17	06/30/18 09:44	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 04/11/18 12:50
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.746		0.349	0.356	1.00	0.510	pCi/L	06/05/18 10:41	06/14/18 15:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					06/05/18 10:41	06/14/18 15:27	1
Y Carrier	94.2		40 - 110					06/05/18 10:41	06/14/18 15:27	1

Client Sample ID: W-2
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.00		0.407	0.417	1.00	0.591	pCi/L	06/05/18 10:41	06/14/18 15:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					06/05/18 10:41	06/14/18 15:15	1
Y Carrier	92.3		40 - 110					06/05/18 10:41	06/14/18 15:15	1

Client Sample ID: W-3
Date Collected: 04/11/18 16:25
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.428	U	0.349	0.351	1.00	0.558	pCi/L	06/05/18 10:41	06/14/18 15:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/05/18 10:41	06/14/18 15:16	1
Y Carrier	94.2		40 - 110					06/05/18 10:41	06/14/18 15:16	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108405-2

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 04/11/18 14:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.568		0.301	0.305	1.00	0.449	pCi/L	06/05/18 10:41	06/14/18 15:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					06/05/18 10:41	06/14/18 15:16	1
Y Carrier	95.0		40 - 110					06/05/18 10:41	06/14/18 15:16	1

Client Sample ID: W-2D
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.10		0.387	0.400	1.00	0.537	pCi/L	06/05/18 10:41	06/14/18 15:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/05/18 10:41	06/14/18 15:16	1
Y Carrier	93.1		40 - 110					06/05/18 10:41	06/14/18 15:16	1

Client Sample ID: W-1EB
Date Collected: 04/11/18 13:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.198	U	0.289	0.290	1.00	0.484	pCi/L	06/05/18 10:41	06/14/18 15:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					06/05/18 10:41	06/14/18 15:16	1
Y Carrier	96.4		40 - 110					06/05/18 10:41	06/14/18 15:16	1

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

Client Sample ID: W-1
Date Collected: 04/11/18 12:50
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.827		0.355	0.362	5.00	0.510	pCi/L		07/02/18 11:33	1

Client Sample ID: W-2
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.24		0.418	0.428	5.00	0.591	pCi/L		07/02/18 11:33	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-108405-2

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

Client Sample ID: W-3
Date Collected: 04/11/18 16:25
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.463	U	0.353	0.355	5.00	0.558	pCi/L		07/02/18 11:33	1

Client Sample ID: W-4
Date Collected: 04/11/18 14:15
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.654		0.308	0.312	5.00	0.449	pCi/L		07/02/18 11:33	1

Client Sample ID: W-2D
Date Collected: 04/11/18 11:10
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.29		0.397	0.410	5.00	0.537	pCi/L		07/02/18 11:44	1

Client Sample ID: W-1EB
Date Collected: 04/11/18 13:00
Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.170	U	0.291	0.292	5.00	0.484	pCi/L		07/02/18 11:44	1

QC Sample Results

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

TestAmerica Job ID: 280-108405-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-368814/23-A

Matrix: Water

Analysis Batch: 373286

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 368814

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.008760	U	0.0412	0.0412	1.00	0.0821	pCi/L	06/05/18 09:17	06/30/18 09:39	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					06/05/18 09:17	06/30/18 09:39	1

Lab Sample ID: LCS 160-368814/1-A

Matrix: Water

Analysis Batch: 373288

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 368814

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226		11.8	11.44		1.16	1.00	0.0909	pCi/L	97	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	92.9		40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-368837/23-A

Matrix: Water

Analysis Batch: 370595

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 368837

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.005722	U	0.185	0.185	1.00	0.333	pCi/L	06/05/18 10:41	06/14/18 15:17	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					06/05/18 10:41	06/14/18 15:17	1
Y Carrier	96.4		40 - 110					06/05/18 10:41	06/14/18 15:17	1

Lab Sample ID: LCS 160-368837/1-A

Matrix: Water

Analysis Batch: 370597

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 368837

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228		8.23	9.977		1.14	1.00	0.410	pCi/L	121	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	92.9		40 - 110							
Y Carrier	97.2		40 - 110							

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-108405-2

Rad

Prep Batch: 368814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total/NA	Water	PrecSep-21	
280-108405-2	W-2	Total/NA	Water	PrecSep-21	
280-108405-3	W-3	Total/NA	Water	PrecSep-21	
280-108405-4	W-4	Total/NA	Water	PrecSep-21	
280-108405-5	W-2D	Total/NA	Water	PrecSep-21	
280-108405-6	W-1EB	Total/NA	Water	PrecSep-21	
MB 160-368814/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-368814/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 368837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-108405-1	W-1	Total/NA	Water	PrecSep_0	
280-108405-2	W-2	Total/NA	Water	PrecSep_0	
280-108405-3	W-3	Total/NA	Water	PrecSep_0	
280-108405-4	W-4	Total/NA	Water	PrecSep_0	
280-108405-5	W-2D	Total/NA	Water	PrecSep_0	
280-108405-6	W-1EB	Total/NA	Water	PrecSep_0	
MB 160-368837/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-368837/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-108405-2

Client Sample ID: W-1

Date Collected: 04/11/18 12:50

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.67 mL	1.0 g	368814	06/05/18 09:17	JLC	TAL SL
Total/NA	Analysis	9315		1			373288	06/30/18 09:43	ALS	TAL SL
Total/NA	Prep	PrecSep_0			750.67 mL	1.0 g	368837	06/05/18 10:41	JLC	TAL SL
Total/NA	Analysis	9320		1			370595	06/14/18 15:27	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:33	ALS	TAL SL

Client Sample ID: W-2

Date Collected: 04/11/18 11:10

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.06 mL	1.0 g	368814	06/05/18 09:17	JLC	TAL SL
Total/NA	Analysis	9315		1			373288	06/30/18 09:43	ALS	TAL SL
Total/NA	Prep	PrecSep_0			750.06 mL	1.0 g	368837	06/05/18 10:41	JLC	TAL SL
Total/NA	Analysis	9320		1			370595	06/14/18 15:15	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:33	ALS	TAL SL

Client Sample ID: W-3

Date Collected: 04/11/18 16:25

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			749.57 mL	1.0 g	368814	06/05/18 09:17	JLC	TAL SL
Total/NA	Analysis	9315		1			373288	06/30/18 09:43	ALS	TAL SL
Total/NA	Prep	PrecSep_0			749.57 mL	1.0 g	368837	06/05/18 10:41	JLC	TAL SL
Total/NA	Analysis	9320		1			370595	06/14/18 15:16	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:33	ALS	TAL SL

Client Sample ID: W-4

Date Collected: 04/11/18 14:15

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.25 mL	1.0 g	368814	06/05/18 09:17	JLC	TAL SL
Total/NA	Analysis	9315		1			373288	06/30/18 09:43	ALS	TAL SL
Total/NA	Prep	PrecSep_0			750.25 mL	1.0 g	368837	06/05/18 10:41	JLC	TAL SL
Total/NA	Analysis	9320		1			370595	06/14/18 15:16	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:33	ALS	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-108405-2

Client Sample ID: W-2D

Date Collected: 04/11/18 11:10

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.20 mL	1.0 g	368814	06/05/18 09:17	JLC	TAL SL
Total/NA	Analysis	9315		1			373288	06/30/18 09:43	ALS	TAL SL
Total/NA	Prep	PrecSep_0			750.20 mL	1.0 g	368837	06/05/18 10:41	JLC	TAL SL
Total/NA	Analysis	9320		1			370595	06/14/18 15:16	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:44	ALS	TAL SL

Client Sample ID: W-1EB

Date Collected: 04/11/18 13:00

Date Received: 04/12/18 12:30

Lab Sample ID: 280-108405-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.45 mL	1.0 g	368814	06/05/18 09:17	JLC	TAL SL
Total/NA	Analysis	9315		1			373287	06/30/18 09:44	ALS	TAL SL
Total/NA	Prep	PrecSep_0			750.45 mL	1.0 g	368837	06/05/18 10:41	JLC	TAL SL
Total/NA	Analysis	9320		1			370595	06/14/18 15:16	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			373524	07/02/18 11:44	ALS	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-108405-2

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

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

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 *
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-18 *
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	07-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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

TestAmerica Denver

Chain of Custody Record

TestAmerica

THE LABORATORY OF ENVIRONMENTAL TESTING

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Address: 13715 Rider Trail North City: Earth City State, Zip: MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email:		Page: Page 1 of 1 Job #: 280-108405-2 Preservation Codes: <table border="0"> <tr><td>A - HCL</td><td>M - Hexane</td></tr> <tr><td>B - NaOH</td><td>N - None</td></tr> <tr><td>C - Zn Acetate</td><td>O - AsHClO2</td></tr> <tr><td>D - Nitric Acid</td><td>P - Na2SO4</td></tr> <tr><td>E - NaHSO4</td><td>Q - Na2SO3</td></tr> <tr><td>F - MeOH</td><td>R - Na2SO3</td></tr> <tr><td>G - Ammonia</td><td>S - H2SO4</td></tr> <tr><td>H - Ascorbic Acid</td><td>T - TSP Dodecahydrate</td></tr> <tr><td>I - Ice</td><td>U - Acetone</td></tr> <tr><td>J - DI Water</td><td>V - MCAA</td></tr> <tr><td>K - EDTA</td><td>W - pH 4.5</td></tr> <tr><td>L - EDA</td><td>X - other (specify)</td></tr> <tr><td colspan="2">Other:</td></tr> </table>		A - HCL	M - Hexane	B - NaOH	N - None	C - Zn Acetate	O - AsHClO2	D - Nitric Acid	P - Na2SO4	E - NaHSO4	Q - Na2SO3	F - MeOH	R - Na2SO3	G - Ammonia	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	X - other (specify)	Other:	
A - HCL	M - Hexane																												
B - NaOH	N - None																												
C - Zn Acetate	O - AsHClO2																												
D - Nitric Acid	P - Na2SO4																												
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K - EDTA	W - pH 4.5																												
L - EDA	X - other (specify)																												
Other:																													
Due Date Requested: 6/27/2018 TAT Requested (days):		Analysis Requested:																											
PO #: 20014377 WO #: SSOWE Project #: 20014377 Site: Xcel Energy CCR - Hayden Station		Total Number of containers: 1																											
Sample Identification - Client ID (Lab ID)		Special Instructions/Note:																											
W-1 (280-108405-1)	Sample Date: 4/11/18	Sample Time: 12:50	Matrix: Water																										
W-2 (280-108405-2)	Sample Date: 4/11/18	Sample Time: 11:10	Matrix: Water																										
W-3 (280-108405-3)	Sample Date: 4/11/18	Sample Time: 16:25	Matrix: Water																										
W-4 (280-108405-4)	Sample Date: 4/11/18	Sample Time: 14:15	Matrix: Water																										
W-2D (280-108405-5)	Sample Date: 4/11/18	Sample Time: 11:10	Matrix: Water																										
W-1EB (280-108405-6)	Sample Date: 4/11/18	Sample Time: 13:00	Matrix: Water																										
Note: Since laboratory accreditation is subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon our subcontracted 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/methods being analyzed, the samples must be shipped back to the TestAmerica laboratory or other institutions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditation is current to date, return the signed Chain of Custody allowing to said compliance to TestAmerica Laboratories, Inc.		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:		Method of Shipment:																											
Relinquished by:		Date/Time:																											
Relinquished by:		Date/Time:																											
Relinquished by:		Date/Time:																											
Custody Seals Intact: Yes		Cooler Temperature(s) °C and Other Remarks:																											

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-108405-2

Login Number: 108405

List Source: TestAmerica Denver

List Number: 1

Creator: Blogin, Nick C

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (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: 280-108405-2

Login Number: 108405

List Number: 3

Creator: Press, Nicholas B

List Source: TestAmerica St. Louis

List Creation: 05/26/18 01:49 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7
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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-108405-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-108405-1	W-1	97.6	
280-108405-2	W-2	100	
280-108405-3	W-3	101	
280-108405-4	W-4	106	
280-108405-5	W-2D	99.7	
280-108405-6	W-1EB	98.8	
LCS 160-368814/1-A	Lab Control Sample	92.9	
MB 160-368814/23-A	Method Blank	98.5	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-108405-1	W-1	97.6	94.2
280-108405-2	W-2	100	92.3
280-108405-3	W-3	101	94.2
280-108405-4	W-4	106	95.0
280-108405-5	W-2D	99.7	93.1
280-108405-6	W-1EB	98.8	96.4
LCS 160-368837/1-A	Lab Control Sample	92.9	97.2
MB 160-368837/23-A	Method Blank	98.5	96.4
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-109755-1

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

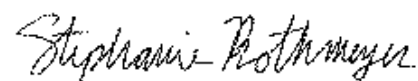
For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

6/20/2018 11:52:22 AM

Stephanie Rothmeyer, Project Manager I

(303)736-0182

stephanie.rothmeyer@testamericainc.com

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results through

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-109755-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
H	Sample was prepped or analyzed beyond the specified holding time

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-109755-1

Job ID: 280-109755-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-109755-1

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 5/15/2018 at 12:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.1° C and 4.6° C.

TOTAL RECOVERABLE METALS

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/18/2018 and analyzed on 05/21/2018.

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

TOTAL DISSOLVED SOLIDS

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 05/19/2018 and 06/01/2018.

Reanalysis of the following sample was performed outside of the analytical holding time due to residue in excess of 200mg in original analysis: W-4 (280-109755-4).

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 05/17/2018.

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

CORROSIVITY (PH)

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 05/30/2018.

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

Case Narrative

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

TestAmerica Job ID: 280-109755-1

Job ID: 280-109755-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

ANIONS (28 DAYS)

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 06/04/2018 and 06/05/2018.

Sulfate failed the recovery criteria low for the MSD of sample 280-109687-5 in batch 280-417399. 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 W-1 (280-109755-1)[20X], W-1 (280-109755-1)[5X], W-2 (280-109755-2)[10X], W-2 (280-109755-2)[50X], W-3 (280-109755-3)[10X], W-3 (280-109755-3)[50X], W-4 (280-109755-4)[100X], W-4 (280-109755-4)[20X], W-1D (280-109755-5)[20X] and W-1D (280-109755-5)[5X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 05/21/2018 and analyzed on 06/18/2018 and 06/19/2018.

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

RADIUM-228

Samples W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 05/21/2018 and analyzed on 05/31/2018.

Radium-228 was detected in method blank MB 160-366811/23-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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 W-1 (280-109755-1), W-2 (280-109755-2), W-3 (280-109755-3), W-4 (280-109755-4), W-1D (280-109755-5) and W-3EB (280-109755-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 06/19/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-109755-1

Client Sample ID: W-1

Lab Sample ID: 280-109755-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.62		0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	44		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	2700		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4600		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-109755-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.5		0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	84		30	2.5	mg/L	10		9056A	Total/NA
Sulfate	4600		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7300		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-109755-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.94		0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		30	2.5	mg/L	10		9056A	Total/NA
Sulfate	8100		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	13000		100	47	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: W-4

Lab Sample ID: 280-109755-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	390		60	5.1	mg/L	20		9056A	Total/NA
Sulfate	14000		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	21000	H	200	94	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-1D

Lab Sample ID: 280-109755-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.62		0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	43		15	1.3	mg/L	5		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-109755-1

Client Sample ID: W-1D (Continued)

Lab Sample ID: 280-109755-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	2800		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4600		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-3EB

Lab Sample ID: 280-109755-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-109755-1

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

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-109755-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-109755-1	W-1	Water	05/14/18 15:05	05/15/18 12:55
280-109755-2	W-2	Water	05/14/18 18:35	05/15/18 12:55
280-109755-3	W-3	Water	05/14/18 16:20	05/15/18 12:55
280-109755-4	W-4	Water	05/14/18 17:35	05/15/18 12:55
280-109755-5	W-1D	Water	05/14/18 15:05	05/15/18 12:55
280-109755-6	W-3EB	Water	05/14/18 16:30	05/15/18 12:55

Client Sample Results

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

TestAmerica Job ID: 280-109755-1

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

Client Sample ID: W-1
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.62		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 15:17	1

Client Sample ID: W-2
Date Collected: 05/14/18 18:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.5		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 16:02	1

Client Sample ID: W-3
Date Collected: 05/14/18 16:20
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.94		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 16:07	1

Client Sample ID: W-4
Date Collected: 05/14/18 17:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 16:12	1

Client Sample ID: W-1D
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.62		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 16:18	1

Client Sample ID: W-3EB
Date Collected: 05/14/18 16:30
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 16:23	1

General Chemistry

Client Sample ID: W-1
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-1
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			05/30/18 21:54	1
Temperature	20.0	HF	1.0	1.0	Degrees C			05/30/18 21:54	1
Chloride	44		15	1.3	mg/L			06/04/18 23:09	5
Fluoride	ND		2.5	0.30	mg/L			06/04/18 23:09	5
Fluoride	ND		2.5	0.30	mg/L			06/04/18 23:09	5
Sulfate	2700		100	4.6	mg/L			06/04/18 23:31	20
Total Dissolved Solids (TDS)	4600		40	19	mg/L			05/19/18 11:34	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/17/18 12:58	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-109755-1

General Chemistry

Client Sample ID: W-2
Date Collected: 05/14/18 18:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-2
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			05/30/18 21:58	1
Temperature	20.0	HF	1.0	1.0	Degrees C			05/30/18 21:58	1
Chloride	84		30	2.5	mg/L			06/05/18 17:28	10
Fluoride	ND		5.0	0.60	mg/L			06/05/18 17:28	10
Fluoride	ND		5.0	0.60	mg/L			06/05/18 17:28	10
Sulfate	4600		250	12	mg/L			06/05/18 17:51	50
Total Dissolved Solids (TDS)	7300		40	19	mg/L			05/19/18 11:34	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			05/17/18 12:58	1

Client Sample ID: W-3
Date Collected: 05/14/18 16:20
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3
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			05/30/18 22:03	1
Temperature	20.2	HF	1.0	1.0	Degrees C			05/30/18 22:03	1
Chloride	190		30	2.5	mg/L			06/05/18 18:13	10
Fluoride	ND		5.0	0.60	mg/L			06/05/18 18:13	10
Fluoride	ND		5.0	0.60	mg/L			06/05/18 18:13	10
Sulfate	8100		250	12	mg/L			06/05/18 18:35	50
Total Dissolved Solids (TDS)	13000		100	47	mg/L			05/19/18 11:34	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			05/17/18 12:58	1

Client Sample ID: W-4
Date Collected: 05/14/18 17:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			05/30/18 21:45	1
Temperature	20.4	HF	1.0	1.0	Degrees C			05/30/18 21:45	1
Chloride	390		60	5.1	mg/L			06/05/18 18:57	20
Fluoride	ND		10	1.2	mg/L			06/05/18 18:57	20
Fluoride	ND		10	1.2	mg/L			06/05/18 18:57	20
Sulfate	14000		500	23	mg/L			06/05/18 19:19	100
Total Dissolved Solids (TDS)	21000	H	200	94	mg/L			06/01/18 11:06	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			05/17/18 12:58	1

Client Sample ID: W-1D
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			05/30/18 22:07	1
Temperature	20.4	HF	1.0	1.0	Degrees C			05/30/18 22:07	1
Chloride	43		15	1.3	mg/L			06/05/18 20:26	5
Fluoride	ND		2.5	0.30	mg/L			06/05/18 20:26	5
Fluoride	ND		2.5	0.30	mg/L			06/05/18 20:26	5
Sulfate	2800		100	4.6	mg/L			06/05/18 20:48	20
Total Dissolved Solids (TDS)	4600		40	19	mg/L			05/19/18 11:34	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/17/18 12:58	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-109755-1

General Chemistry

Client Sample ID: W-3EB

Date Collected: 05/14/18 16:30

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU			05/30/18 22:11	1
Temperature	19.7	HF	1.0	1.0	Degrees C			05/30/18 22:11	1
Chloride	ND		3.0	0.25	mg/L			06/05/18 21:10	1
Fluoride	ND		0.50	0.060	mg/L			06/05/18 21:10	1
Fluoride	ND		0.50	0.060	mg/L			06/05/18 21:10	1
Sulfate	ND		5.0	0.23	mg/L			06/05/18 21:10	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			05/19/18 11:34	1
Total Suspended Solids	ND		4.0	1.1	mg/L			05/17/18 12:58	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1

Date Collected: 05/14/18 15:05

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-1

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0884		0.0603	0.0608	1.00	0.0806	pCi/L	05/21/18 14:42	06/19/18 05:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					05/21/18 14:42	06/19/18 05:30	1

Client Sample ID: W-2

Date Collected: 05/14/18 18:35

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-2

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.214		0.0852	0.0874	1.00	0.0884	pCi/L	05/21/18 14:42	06/18/18 17:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					05/21/18 14:42	06/18/18 17:15	1

Client Sample ID: W-3

Date Collected: 05/14/18 16:20

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0946	U	0.0721	0.0726	1.00	0.104	pCi/L	05/21/18 14:42	06/18/18 17:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					05/21/18 14:42	06/18/18 17:16	1

Client Sample ID: W-4

Date Collected: 05/14/18 17:35

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-4

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.173		0.0832	0.0846	1.00	0.0990	pCi/L	05/21/18 14:42	06/18/18 17:16	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-109755-1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/21/18 14:42	06/18/18 17:16	1

Client Sample ID: W-1D Date Collected: 05/14/18 15:05 Date Received: 05/15/18 12:55				Lab Sample ID: 280-109755-5 Matrix: Water		

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.133		0.0721	0.0731	1.00	0.0904	pCi/L	05/21/18 14:42	06/18/18 17:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.0		40 - 110	05/21/18 14:42	06/18/18 17:20	1

Client Sample ID: W-3EB Date Collected: 05/14/18 16:30 Date Received: 05/15/18 12:55				Lab Sample ID: 280-109755-6 Matrix: Water		

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0428	U	0.0426	0.0427	1.00	0.0645	pCi/L	05/21/18 14:42	06/18/18 17:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/21/18 14:42	06/18/18 17:20	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1 Date Collected: 05/14/18 15:05 Date Received: 05/15/18 12:55				Lab Sample ID: 280-109755-1 Matrix: Water		

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.279	U	0.250	0.251	1.00	0.402	pCi/L	05/21/18 15:44	05/31/18 14:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	05/21/18 15:44	05/31/18 14:50	1
Y Carrier	93.8		40 - 110	05/21/18 15:44	05/31/18 14:50	1

Client Sample ID: W-2 Date Collected: 05/14/18 18:35 Date Received: 05/15/18 12:55				Lab Sample ID: 280-109755-2 Matrix: Water		

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.588		0.225	0.232	1.00	0.305	pCi/L	05/21/18 15:44	05/31/18 14:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/21/18 15:44	05/31/18 14:50	1
Y Carrier	94.6		40 - 110	05/21/18 15:44	05/31/18 14:50	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-109755-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-3
Date Collected: 05/14/18 16:20
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.558		0.253	0.258	1.00	0.361	pCi/L	05/21/18 15:44	05/31/18 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					05/21/18 15:44	05/31/18 14:50	1
Y Carrier	89.0		40 - 110					05/21/18 15:44	05/31/18 14:50	1

Client Sample ID: W-4
Date Collected: 05/14/18 17:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.912		0.299	0.311	1.00	0.412	pCi/L	05/21/18 15:44	05/31/18 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					05/21/18 15:44	05/31/18 14:50	1
Y Carrier	93.5		40 - 110					05/21/18 15:44	05/31/18 14:50	1

Client Sample ID: W-1D
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.259	U	0.247	0.248	1.00	0.400	pCi/L	05/21/18 15:44	05/31/18 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.0		40 - 110					05/21/18 15:44	05/31/18 14:50	1
Y Carrier	90.8		40 - 110					05/21/18 15:44	05/31/18 14:50	1

Client Sample ID: W-3EB
Date Collected: 05/14/18 16:30
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.126	U	0.195	0.196	1.00	0.371	pCi/L	05/21/18 15:44	05/31/18 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					05/21/18 15:44	05/31/18 14:50	1
Y Carrier	90.8		40 - 110					05/21/18 15:44	05/31/18 14:50	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-109755-1

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

Client Sample ID: W-1
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.368	U	0.257	0.258	5.00	0.402	pCi/L		06/19/18 18:29	1

Client Sample ID: W-2
Date Collected: 05/14/18 18:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.802		0.241	0.248	5.00	0.305	pCi/L		06/19/18 18:29	1

Client Sample ID: W-3
Date Collected: 05/14/18 16:20
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.652		0.263	0.268	5.00	0.361	pCi/L		06/19/18 18:29	1

Client Sample ID: W-4
Date Collected: 05/14/18 17:35
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.09		0.310	0.322	5.00	0.412	pCi/L		06/19/18 18:29	1

Client Sample ID: W-1D
Date Collected: 05/14/18 15:05
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.392	U	0.257	0.259	5.00	0.400	pCi/L		06/19/18 18:29	1

Client Sample ID: W-3EB
Date Collected: 05/14/18 16:30
Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0832	U	0.200	0.201	5.00	0.371	pCi/L		06/19/18 18:29	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-109755-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-327510/1-A
Matrix: Water
Analysis Batch: 327969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 327510

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		05/18/18 14:00	05/21/18 15:08	1

Lab Sample ID: LCS 240-327510/2-A
Matrix: Water
Analysis Batch: 327969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 327510

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.10		mg/L		110	80 - 120

Lab Sample ID: 280-109755-1 MS
Matrix: Water
Analysis Batch: 327969

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 327510

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.62		1.00	1.74		mg/L		113	75 - 125

Lab Sample ID: 280-109755-1 MSD
Matrix: Water
Analysis Batch: 327969

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 327510

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.62		1.00	1.76		mg/L		115	75 - 125	1	20

Method: 9040B - pH

Lab Sample ID: LCS 280-416969/4
Matrix: Water
Analysis Batch: 416969

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: 280-109755-4 DU
Matrix: Water
Analysis Batch: 416969

Client Sample ID: W-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.6	HF	7.6		SU		0	5
Temperature	20.4	HF	20.1		Degrees C		2	10

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-417251/6
Matrix: Water
Analysis Batch: 417251

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			06/04/18 12:33	1
Fluoride	ND		0.50	0.060	mg/L			06/04/18 12:33	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-109755-1

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

Lab Sample ID: MB 280-417251/6

Matrix: Water

Analysis Batch: 417251

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			06/04/18 12:33	1

Lab Sample ID: LCS 280-417251/4

Matrix: Water

Analysis Batch: 417251

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	4.96		mg/L		99	90 - 110
Sulfate	100	99.0		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-417251/5

Matrix: Water

Analysis Batch: 417251

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	4.99		mg/L		100	90 - 110	0	10
Sulfate	100	99.0		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-417251/3

Matrix: Water

Analysis Batch: 417251

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		93	50 - 150
Sulfate	2.50	2.43	J	mg/L		97	50 - 150

Lab Sample ID: MB 280-417399/6

Matrix: Water

Analysis Batch: 417399

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			06/05/18 12:05	1
Fluoride	ND		0.50	0.060	mg/L			06/05/18 12:05	1
Sulfate	ND		5.0	0.23	mg/L			06/05/18 12:05	1

Lab Sample ID: LCS 280-417399/4

Matrix: Water

Analysis Batch: 417399

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	4.94		mg/L		99	90 - 110
Sulfate	100	99.3		mg/L		99	90 - 110

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-109755-1

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

Lab Sample ID: LCSD 280-417399/5

Matrix: Water

Analysis Batch: 417399

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	4.99		mg/L		100	90 - 110	1	10
Sulfate	100	99.2		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-417399/3

Matrix: Water

Analysis Batch: 417399

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	2.56	J	mg/L		102	50 - 150		
Fluoride	0.200	0.162	J	mg/L		81	50 - 150		
Sulfate	2.50	2.36	J	mg/L		94	50 - 150		

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

Lab Sample ID: MB 280-415513/1

Matrix: Water

Analysis Batch: 415513

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			05/19/18 11:34	1

Lab Sample ID: LCS 280-415513/2

Matrix: Water

Analysis Batch: 415513

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)	501	502		mg/L		100	86 - 110		

Lab Sample ID: LCSD 280-415513/3

Matrix: Water

Analysis Batch: 415513

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	502		mg/L		100	86 - 110	0	20

Lab Sample ID: MB 280-417084/1

Matrix: Water

Analysis Batch: 417084

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			06/01/18 11:06	1

Lab Sample ID: LCS 280-417084/2

Matrix: Water

Analysis Batch: 417084

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)	499	493		mg/L		99	86 - 110		

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-109755-1

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

Lab Sample ID: LCSD 280-417084/25

Matrix: Water

Analysis Batch: 417084

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)	499	479		mg/L		96	86 - 110	3	20

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

Lab Sample ID: MB 280-415253/1

Matrix: Water

Analysis Batch: 415253

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			05/17/18 12:58	1

Lab Sample ID: LCS 280-415253/2

Matrix: Water

Analysis Batch: 415253

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	98.0		mg/L		98	86 - 114		

Lab Sample ID: 280-109755-6 DU

Matrix: Water

Analysis Batch: 415253

Client Sample ID: W-3EB

Prep Type: Total/NA

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

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-366803/23-A

Matrix: Water

Analysis Batch: 370841

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 366803

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03636	U	0.0475	0.0476	1.00	0.0792	pCi/L	05/21/18 14:42	06/18/18 19:08	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					05/21/18 14:42	06/18/18 19:08	1

Lab Sample ID: LCS 160-366803/1-A

Matrix: Water

Analysis Batch: 371107

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 366803

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	11.8	10.86		1.10	1.00	0.0819	pCi/L	92	68 - 137		
Carrier	LCS %Yield	LCS Qualifier	Limits								
Ba Carrier	95.3		40 - 110								

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-109755-1

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-366811/23-A

Matrix: Water

Analysis Batch: 368174

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 366811

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5847		0.239	0.245	1.00	0.335	pCi/L	05/21/18 15:44	05/31/18 14:47	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	05/21/18 15:44	05/31/18 14:47	1
Y Carrier	93.1		40 - 110	05/21/18 15:44	05/31/18 14:47	1

Lab Sample ID: LCS 160-366811/1-A

Matrix: Water

Analysis Batch: 368163

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 366811

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	8.27	9.362		1.07	1.00	0.347	pCi/L	113	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	95.3		40 - 110
Y Carrier	96.1		40 - 110

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-109755-1

Metals

Prep Batch: 327510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total Recoverable	Water	3005A	
280-109755-2	W-2	Total Recoverable	Water	3005A	
280-109755-3	W-3	Total Recoverable	Water	3005A	
280-109755-4	W-4	Total Recoverable	Water	3005A	
280-109755-5	W-1D	Total Recoverable	Water	3005A	
280-109755-6	W-3EB	Total Recoverable	Water	3005A	
MB 240-327510/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-327510/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-109755-1 MS	W-1	Total Recoverable	Water	3005A	
280-109755-1 MSD	W-1	Total Recoverable	Water	3005A	

Analysis Batch: 327969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total Recoverable	Water	6010C	327510
280-109755-2	W-2	Total Recoverable	Water	6010C	327510
280-109755-3	W-3	Total Recoverable	Water	6010C	327510
280-109755-4	W-4	Total Recoverable	Water	6010C	327510
280-109755-5	W-1D	Total Recoverable	Water	6010C	327510
280-109755-6	W-3EB	Total Recoverable	Water	6010C	327510
MB 240-327510/1-A	Method Blank	Total Recoverable	Water	6010C	327510
LCS 240-327510/2-A	Lab Control Sample	Total Recoverable	Water	6010C	327510
280-109755-1 MS	W-1	Total Recoverable	Water	6010C	327510
280-109755-1 MSD	W-1	Total Recoverable	Water	6010C	327510

General Chemistry

Analysis Batch: 415253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total/NA	Water	SM 2540D	
280-109755-2	W-2	Total/NA	Water	SM 2540D	
280-109755-3	W-3	Total/NA	Water	SM 2540D	
280-109755-4	W-4	Total/NA	Water	SM 2540D	
280-109755-5	W-1D	Total/NA	Water	SM 2540D	
280-109755-6	W-3EB	Total/NA	Water	SM 2540D	
MB 280-415253/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-415253/2	Lab Control Sample	Total/NA	Water	SM 2540D	
280-109755-6 DU	W-3EB	Total/NA	Water	SM 2540D	

Analysis Batch: 415513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total/NA	Water	SM 2540C	
280-109755-2	W-2	Total/NA	Water	SM 2540C	
280-109755-3	W-3	Total/NA	Water	SM 2540C	
280-109755-5	W-1D	Total/NA	Water	SM 2540C	
280-109755-6	W-3EB	Total/NA	Water	SM 2540C	
MB 280-415513/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-415513/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-415513/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-109755-1

General Chemistry (Continued)

Analysis Batch: 416969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total/NA	Water	9040B	
280-109755-2	W-2	Total/NA	Water	9040B	
280-109755-3	W-3	Total/NA	Water	9040B	
280-109755-4	W-4	Total/NA	Water	9040B	
280-109755-5	W-1D	Total/NA	Water	9040B	
280-109755-6	W-3EB	Total/NA	Water	9040B	
LCS 280-416969/4	Lab Control Sample	Total/NA	Water	9040B	
280-109755-4 DU	W-4	Total/NA	Water	9040B	

Analysis Batch: 417084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-4	W-4	Total/NA	Water	SM 2540C	
MB 280-417084/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-417084/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-417084/25	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 417251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total/NA	Water	9056A	
280-109755-1	W-1	Total/NA	Water	9056A	
MB 280-417251/6	Method Blank	Total/NA	Water	9056A	
LCS 280-417251/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-417251/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-417251/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 417399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-2	W-2	Total/NA	Water	9056A	
280-109755-2	W-2	Total/NA	Water	9056A	
280-109755-3	W-3	Total/NA	Water	9056A	
280-109755-3	W-3	Total/NA	Water	9056A	
280-109755-4	W-4	Total/NA	Water	9056A	
280-109755-4	W-4	Total/NA	Water	9056A	
280-109755-5	W-1D	Total/NA	Water	9056A	
280-109755-5	W-1D	Total/NA	Water	9056A	
280-109755-6	W-3EB	Total/NA	Water	9056A	
MB 280-417399/6	Method Blank	Total/NA	Water	9056A	
LCS 280-417399/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-417399/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-417399/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 366803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total/NA	Water	PrecSep-21	
280-109755-2	W-2	Total/NA	Water	PrecSep-21	
280-109755-3	W-3	Total/NA	Water	PrecSep-21	
280-109755-4	W-4	Total/NA	Water	PrecSep-21	
280-109755-5	W-1D	Total/NA	Water	PrecSep-21	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-109755-1

Rad (Continued)

Prep Batch: 366803 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-6	W-3EB	Total/NA	Water	PrecSep-21	
MB 160-366803/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-366803/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 366811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-109755-1	W-1	Total/NA	Water	PrecSep_0	
280-109755-2	W-2	Total/NA	Water	PrecSep_0	
280-109755-3	W-3	Total/NA	Water	PrecSep_0	
280-109755-4	W-4	Total/NA	Water	PrecSep_0	
280-109755-5	W-1D	Total/NA	Water	PrecSep_0	
280-109755-6	W-3EB	Total/NA	Water	PrecSep_0	
MB 160-366811/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-366811/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-109755-1

Client Sample ID: W-1

Date Collected: 05/14/18 15:05

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-1

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	327510	05/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			327969	05/21/18 15:17	KLC	TAL CAN
Total/NA	Analysis	9040B		1			416969	05/30/18 21:54	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	417251	06/04/18 23:09	CCJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	417251	06/04/18 23:31	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	415513	05/19/18 11:34	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	415253	05/17/18 12:58	AWW	TAL DEN
Total/NA	Prep	PrecSep-21			999.38 mL	1.0 g	366803	05/21/18 14:42	TJT	TAL SL
Total/NA	Analysis	9315		1			371107	06/19/18 05:30	ALS	TAL SL
Total/NA	Prep	PrecSep_0			999.38 mL	1.0 g	366811	05/21/18 15:44	TJT	TAL SL
Total/NA	Analysis	9320		1			368163	05/31/18 14:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			371289	06/19/18 18:29	ALS	TAL SL

Client Sample ID: W-2

Date Collected: 05/14/18 18:35

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-2

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	327510	05/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			327969	05/21/18 16:02	KLC	TAL CAN
Total/NA	Analysis	9040B		1			416969	05/30/18 21:58	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	417399	06/05/18 17:28	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	417399	06/05/18 17:51	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	415513	05/19/18 11:34	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	415253	05/17/18 12:58	AWW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	366803	05/21/18 14:42	TJT	TAL SL
Total/NA	Analysis	9315		1			371080	06/18/18 17:15	ALS	TAL SL
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	366811	05/21/18 15:44	TJT	TAL SL
Total/NA	Analysis	9320		1			368163	05/31/18 14:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			371289	06/19/18 18:29	ALS	TAL SL

Client Sample ID: W-3

Date Collected: 05/14/18 16:20

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3

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	327510	05/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			327969	05/21/18 16:07	KLC	TAL CAN
Total/NA	Analysis	9040B		1			416969	05/30/18 22:03	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	417399	06/05/18 18:13	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	417399	06/05/18 18:35	TLP	TAL DEN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-109755-1

Client Sample ID: W-3

Date Collected: 05/14/18 16:20

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	415513	05/19/18 11:34	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	415253	05/17/18 12:58	AWW	TAL DEN
Total/NA	Prep	PrecSep-21			999.60 mL	1.0 g	366803	05/21/18 14:42	TJT	TAL SL
Total/NA	Analysis	9315		1			371080	06/18/18 17:16	ALS	TAL SL
Total/NA	Prep	PrecSep_0			999.60 mL	1.0 g	366811	05/21/18 15:44	TJT	TAL SL
Total/NA	Analysis	9320		1			368163	05/31/18 14:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			371289	06/19/18 18:29	ALS	TAL SL

Client Sample ID: W-4

Date Collected: 05/14/18 17:35

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-4

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	327510	05/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			327969	05/21/18 16:12	KLC	TAL CAN
Total/NA	Analysis	9040B		1			416969	05/30/18 21:45	LPL	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	417399	06/05/18 18:57	TLP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	417399	06/05/18 19:19	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	417084	06/01/18 11:06	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	415253	05/17/18 12:58	AWW	TAL DEN
Total/NA	Prep	PrecSep-21			999.49 mL	1.0 g	366803	05/21/18 14:42	TJT	TAL SL
Total/NA	Analysis	9315		1			371080	06/18/18 17:16	ALS	TAL SL
Total/NA	Prep	PrecSep_0			999.49 mL	1.0 g	366811	05/21/18 15:44	TJT	TAL SL
Total/NA	Analysis	9320		1			368163	05/31/18 14:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			371289	06/19/18 18:29	ALS	TAL SL

Client Sample ID: W-1D

Date Collected: 05/14/18 15:05

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-5

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	327510	05/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			327969	05/21/18 16:18	KLC	TAL CAN
Total/NA	Analysis	9040B		1			416969	05/30/18 22:07	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	417399	06/05/18 20:26	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	417399	06/05/18 20:48	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	415513	05/19/18 11:34	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	415253	05/17/18 12:58	AWW	TAL DEN
Total/NA	Prep	PrecSep-21			1000.73 mL	1.0 g	366803	05/21/18 14:42	TJT	TAL SL
Total/NA	Analysis	9315		1			370842	06/18/18 17:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.73 mL	1.0 g	366811	05/21/18 15:44	TJT	TAL SL
Total/NA	Analysis	9320		1			368163	05/31/18 14:50	ALS	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-109755-1

Client Sample ID: W-1D

Date Collected: 05/14/18 15:05

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Ra226_Ra228		1			371289	06/19/18 18:29	ALS	TAL SL

Client Sample ID: W-3EB

Date Collected: 05/14/18 16:30

Date Received: 05/15/18 12:55

Lab Sample ID: 280-109755-6

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	327510	05/18/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			327969	05/21/18 16:23	KLC	TAL CAN
Total/NA	Analysis	9040B		1			416969	05/30/18 22:11	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	417399	06/05/18 21:10	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	415513	05/19/18 11:34	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	415253	05/17/18 12:58	AWW	TAL DEN
Total/NA	Prep	PrecSep-21			999.33 mL	1.0 g	366803	05/21/18 14:42	TJT	TAL SL
Total/NA	Analysis	9315		1			370842	06/18/18 17:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.33 mL	1.0 g	366811	05/21/18 15:44	TJT	TAL SL
Total/NA	Analysis	9320		1			368163	05/31/18 14:50	ALS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			371289	06/19/18 18:29	ALS	TAL SL

Laboratory References:

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

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

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-109755-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

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

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-109755-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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

TestAmerica Denver

Chain of Custody Record

Client Information Client Contact: Anna Lundin Company: HDR Inc Address: 9781 S. Meridian Blvd Suite 400 City: Englewood State, Zip: CO, 80112 Phone: 720-833-2380 (Tel) Email: anna.lundin@hdrinc.com Project Name: Xcel Energy GW CCR Monitoring - Hayden Site: Colorado		Sample: Tava Kent Lab Pkt: Rothmeyer, Stephanie K Phone: 720.933.7496 E-Mail: stephanie.rothmeyer@testamerica.com		Carrier Tracking No(s): Page: 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): Standard PO #: DEN-001 WO #: Project #: 28014377 SSOW#:		Analysis Requested 2540C - Total Dissolved Solids (TDS) Metals - 6010C pH - 9040B, Arions - 3050A, 280 TSS Paab/raab			
Sample Identification Sample ID: W-1 W-2 W-3 W-4 Field Duplicate W-1D Equipment Blank W-3EB		Sample Date 5/14/18 5/14/18 5/14/18 5/14/18 5/14/18 5/14/18	Sample Time 1505 1605 1620 1735 1505 1630	Sample Type (C=Comp, G=Grab) G G G G G G	Matrix (Water, Acid, Other) Water Water Water Water Water Water
Special Instructions/Note: 280-109755 Chain of Custody		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anion H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - FIDA M - Hexams N - None O - AsHAO2 P - Na2CO3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - FIDA Z - other (specify)			
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant 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			
Empty Kit Relinquished by: Tava Kent Relinquished by: Relinquished by: Relinquished by:		Method of Shipment: Received by: Leta Date/Time: 5-15-18 12:55 Received by: Date/Time: Received by: Date/Time:			
Custody Seals Intact: ☒ Yes ☐ No Custody Seal No.:		Cooler Temperature (°C) and Other Remarks: 3.1, 4.6, 20.8, 20.0, 20.5, 15.0			

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		Lab Data		Carrier Tracking No(s):		COC No:			
Client Contact: Anna Lundin Company: HDR Inc		Sample: Tava Kent Phone: 720 933 7496		Lab Data: Rohmeyer, Stephanie K E-Mail: stephanie.rohmeyer@testamerica.com		Page: 1 of 1 Job #:			
Address: 9781 S. Meridian Blvd Suite 400 City: Englewood State, Zip: CO, 80112 Phone: 720-633-2380 (Tel) Email: anna.lundin@hdrinc.com Project Name: Xcel Energy GW CCR Monitoring - Hayden Site: Colorado		Due Date Requested: TAT Requested (days): Standard PO #: DEN-001 WO #: Project #: 28014377 SSOW #:		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsHClO2 P - Na2CO3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)			
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=Grab)		Matrix (W=Water, S=Soil, O=Other, A=Air)	
W-1		5/14/18		1505		G		Water	
W-2		5/14/18		1505		G		Water	
W-3		5/14/18		1620		G		Water	
W-4		5/14/18		1735		G		Water	
Field Duplicate W-1D		5/14/18		1505		G		Water	
Equipment Blank W-3EB		5/14/18		1630		G		Water	
Special Instructions/Note:		2540C - Total Dissolved Solids (TDS)		Metals - 8010C		PF - 8040B, Arlene - 8054A, 28D		TSS	
Barcode		280-106755 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)		Empty Kit Relinquished by: Tava Kent		Date: 5/15/18		Received by: [Signature]		Company: TA-041	
Relinquished by:		Date/Time:		Date/Time:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Date/Time:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Date/Time:		Date/Time:		Company:	
Custody Seal No.:		Custody Seal No.:		Custody Seal No.:		Custody Seal No.:		Custody Seal No.:	
A Yes A No		A Yes A No		A Yes A No		A Yes A No		A Yes A No	

Chain of Custody Record

Client Information Client Contact: Anna Lundin Company: HDR Inc Address: 9781 S. Meridian Blvd Suite 400 City: Englewood State, Zip: CO, 80112 Phone: 720-633-2380(Tel) Email: anna.lundin@hdrinc.com Project Name: Xcel Energy GW COR Monitoring - Hayden Site: Colorado		Samples: Tava Kent Lab P/N: Rothmeyer, Stephanie K Phone: 720.933.7496 E-Mail: stephanie.rothmeyer@testamerica.com		COC No: Page: 1 of 1 Job #	
Due Date Requested: TAT Requested (days): Standard PO #: DIEN-001 WO #: Project #: 28014377 SSOW#:		Analysis Requested Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - Nitric Acid F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - Di Water K - EDTA L - EDA Other: 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)			
Sample Identification Sample ID: W-1 Sample ID: W-2 Sample ID: W-3 Sample ID: W-4 Sample ID: W-1D Sample ID: W-3EB		Special Instructions/Note: 280-109755 Chain of Custody			
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Polson 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: Tava Kent Date/Time: 15 MAY 2013 Company:		Time: 1255 Received by: [Signature] Date/Time: 5-15-18 Company: TA-041			
Relinquished by: Date/Time: Company:		Received by: Date/Time: Company:			
Relinquished by: Date/Time: Company:		Received by: Date/Time: Company:			
Custody Seal No.: Δ Yes Δ No		Custody Seal No.: 3.1, 4.6, 12.5, 15.18			

TestAmerica

Ver: 6037(0620)16

TestAmerica Canton Sample Receipt Form/Narrative				Login # : _____
Canton Facility				
Client <u>TA Dwyer</u>		Site Name _____		Cooler unpacked by: <u>88C</u>
Cooler Received on <u>5/17/18</u>		Opened on <u>5/17/18</u>		
FedEx: 1 st Grd <u>Exp</u> UPS FAS Clipper		Client Drop Off _____		TestAmerica Courier _____ Other _____
Receipt After-hours: Drop-off Date/Time			Storage Location	
TestAmerica Cooler # <u>TA</u>		Foam Box _____	Client Cooler _____	Box _____ Other _____
Packing material used: Bubble Wrap _____ Foam _____		Plastic Bag <u>None</u> Other _____		
COOLANT: Wet Ice _____ Blue Ice _____		Dry Ice _____ Water <u>None</u>		
1. Cooler temperature upon receipt. ☐ See Multiple Cooler Form				
IR GUN# IR-8 (CF +0.1 °C)		Observed Cooler Temp. <u>16.2</u> °C	Corrected Cooler Temp. <u>16.3</u> °C	
IR GUN #36 (CF +0.3 °C)		Observed Cooler Temp. _____ °C	Corrected Cooler Temp. _____ °C	
IR GUN #627 (CF -1.3 °C)		Observed Cooler Temp. _____ °C	Corrected Cooler Temp. _____ °C	
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u>		Yes <u>Yes</u> No _____		
-Were the seals on the outside of the cooler(s) signed & dated?		Yes <u>Yes</u> No <u>NA</u>		
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?		Yes <u>Yes</u> No <u>NA</u>		
-Were tamper/custody seals intact and uncompromised?		Yes <u>Yes</u> No <u>NA</u>		
3. Shippers' packing slip attached to the cooler(s)?		Yes <u>Yes</u> No _____		
4. Did custody papers accompany the sample(s)?		Yes <u>Yes</u> No _____		
5. Were the custody papers relinquished & signed in the appropriate place?		Yes <u>Yes</u> No _____		
6. Was/were the person(s) who collected the samples clearly identified on the COC?		Yes <u>Yes</u> No _____		
7. Did all bottles arrive in good condition (Unbroken)?		Yes <u>Yes</u> No _____		
8. Could all bottle labels be reconciled with the COC?		Yes <u>Yes</u> No _____		
9. Were correct bottle(s) used for the test(s) indicated?		Yes <u>Yes</u> No _____		
10. Sufficient quantity received to perform indicated analyses?		Yes <u>Yes</u> No _____		
11. Are these work share samples?		Yes <u>Yes</u> No _____		
If yes, Questions 12-16 have been checked at the originating laboratory.				
12. Were all preserved sample(s) at the correct pH upon receipt?		Yes <u>Yes</u> No <u>NA</u> pH Strip Lot# <u>HC732776</u>		
13. Were VOAs on the COC?		Yes <u>Yes</u> No _____		
14. Were air bubbles >6 mm in any VOA vials? <u>Larger than this</u>		Yes <u>Yes</u> No <u>NA</u>		
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____		Yes <u>Yes</u> No _____		
16. Was a LL Hg or Me Hg trip blank present?		Yes <u>Yes</u> No _____		
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____				
Concerning _____				

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

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: 280-109755-1

Login Number: 109755

List Source: TestAmerica Denver

List Number: 1

Creator: Pottruff, Reed W

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (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: 280-109755-1

Login Number: 109755

List Number: 2

Creator: Press, Nicholas B

List Source: TestAmerica St. Louis

List Creation: 05/17/18 12:54 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19, 19
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-109755-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)					
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)					
280-109755-1	W-1	93.2					
280-109755-2	W-2	101					
280-109755-3	W-3	96.5					
280-109755-4	W-4	101					
280-109755-5	W-1D	95.0					
280-109755-6	W-3EB	101					
LCS 160-366803/1-A	Lab Control Sample	95.3					
MB 160-366803/23-A	Method Blank	101					
Tracer/Carrier Legend							
Ba Carrier = Ba Carrier							

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)					
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)				
280-109755-1	W-1	93.2	93.8				
280-109755-2	W-2	101	94.6				
280-109755-3	W-3	96.5	89.0				
280-109755-4	W-4	101	93.5				
280-109755-5	W-1D	95.0	90.8				
280-109755-6	W-3EB	101	90.8				
LCS 160-366811/1-A	Lab Control Sample	95.3	96.1				
MB 160-366811/23-A	Method Blank	101	93.1				
Tracer/Carrier Legend							
Ba Carrier = Ba Carrier							
Y Carrier = Y Carrier							

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-110845-1

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

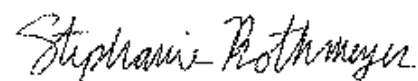
For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

7/19/2018 1:14:53 PM

Stephanie Rothmeyer, Project Manager I

(303)736-0182

stephanie.rothmeyer@testamericainc.com

LINKS

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-110845-1

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
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.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-110845-1

Job ID: 280-110845-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-110845-1

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 6/12/2018 at 1:57 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.3° C and 3.5° C.

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 06/15/2018 and analyzed on 06/18/2018.

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

TOTAL MERCURY

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 07/03/2018 and analyzed on 07/05/2018.

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

TOTAL DISSOLVED SOLIDS

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 06/18/2018.

Total Dissolved Solids (TDS) was detected in method blank MB 280-418963/1 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 06/15/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-110765-1. Sample non-homogeneity is suspected.

Case Narrative

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

TestAmerica Job ID: 280-110845-1

Job ID: 280-110845-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

CORROSIVITY (PH)

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 06/30/2018 and 07/05/2018.

The following samples failed to reach constant pH after 3 replicates: 2-3EB (280-110845-6).

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

ANIONS (28 DAYS)

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 07/03/2018, 07/07/2018, 07/08/2018 and 07/09/2018.

Samples W-1 (280-110845-1)[20X], W-1 (280-110845-1)[5X], W-2 (280-110845-2)[5X], W-2 (280-110845-2)[50X], W-3 (280-110845-3)[100X], W-3 (280-110845-3)[5X], W-4 (280-110845-4)[10X], W-4 (280-110845-4)[100X], W-2D (280-110845-5)[2X] and W-2D (280-110845-5)[50X] required dilution prior to analysis due to the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 06/19/2018 and analyzed on 07/13/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-371257.

Sample aliquots reduced due to limited sample volume: W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5), 2-3EB (280-110845-6).

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

RADIUM-228

Samples W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 06/19/2018 and analyzed on 07/12/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with batch 160-371263.

Sample aliquots reduced due to limited sample volume: W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5), 2-3EB (280-110845-6).

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 W-1 (280-110845-1), W-2 (280-110845-2), W-3 (280-110845-3), W-4 (280-110845-4), W-2D (280-110845-5) and 2-3EB (280-110845-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 07/19/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-110845-1

Client Sample ID: W-1

Lab Sample ID: 280-110845-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Barium	0.0096		0.0050	0.0022	mg/L	1			6020A	Total
Calcium	340		1.0	0.58	mg/L	1			6020A	Recoverable Total
Cobalt	0.00080	J	0.0010	0.00019	mg/L	1			6020A	Recoverable Total
Molybdenum	0.0046	J	0.010	0.0011	mg/L	1			6020A	Recoverable Total
Selenium	0.011		0.0050	0.00089	mg/L	1			6020A	Recoverable Total
Lithium	0.28		0.0080	0.0017	mg/L	1			6020A	Recoverable Total
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	19.2	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	43		15	1.3	mg/L	5			9056A	Total/NA
Sulfate	2700		100	4.6	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4500	B	40	19	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-110845-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Barium	0.0055		0.0050	0.0022	mg/L	1			6020A	Total
Calcium	370		1.0	0.58	mg/L	1			6020A	Recoverable Total
Cobalt	0.0011		0.0010	0.00019	mg/L	1			6020A	Recoverable Total
Molybdenum	0.0040	J	0.010	0.0011	mg/L	1			6020A	Recoverable Total
Selenium	0.0038	J	0.0050	0.00089	mg/L	1			6020A	Recoverable Total
Lithium	0.72		0.0080	0.0017	mg/L	1			6020A	Recoverable Total
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	18.4	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	81		15	1.3	mg/L	5			9056A	Total/NA
Fluoride	0.53	J	2.5	0.30	mg/L	5			9056A	Total/NA
Fluoride	0.53	J	2.5	0.30	mg/L	5			9056A	Total/NA
Sulfate	4300		250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	7200	B	40	19	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	3.2	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-110845-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Barium	0.0066		0.0050	0.0022	mg/L	1			6020A	Total
Calcium	390		1.0	0.58	mg/L	1			6020A	Recoverable Total
Cadmium	0.00041	J	0.0010	0.00021	mg/L	1			6020A	Recoverable Total
Cobalt	0.0018		0.0010	0.00019	mg/L	1			6020A	Recoverable Total

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-110845-1

Client Sample ID: W-3 (Continued)

Lab Sample ID: 280-110845-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.018		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	1.8		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.51	J	2.5	0.30	mg/L	5		9056A	Total/NA
Fluoride	0.51	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	7900		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	13000	B	100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	7.2		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-110845-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0093		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	370		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00033	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0061		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0027	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.93		0.0080	0.0017	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	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	380		30	2.5	mg/L	10		9056A	Total/NA
Sulfate	13000		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	25000	B	200	94	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	8.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-2D

Lab Sample ID: 280-110845-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0053		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	360		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0011		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0046	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.70		0.0080	0.0017	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 - Hayden

TestAmerica Job ID: 280-110845-1

Client Sample ID: W-2D (Continued)

Lab Sample ID: 280-110845-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	80		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.42	J	1.0	0.12	mg/L	2		9056A	Total/NA
Fluoride	0.42	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4400		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7300	B	40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: 2-3EB

Lab Sample ID: 280-110845-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0017	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	18.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-110845-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-110845-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-110845-1	W-1	Water	06/11/18 18:45	06/12/18 13:57
280-110845-2	W-2	Water	06/11/18 16:30	06/12/18 13:57
280-110845-3	W-3	Water	06/11/18 15:10	06/12/18 13:57
280-110845-4	W-4	Water	06/11/18 17:45	06/12/18 13:57
280-110845-5	W-2D	Water	06/11/18 16:30	06/12/18 13:57
280-110845-6	2-3EB	Water	06/11/18 15:25	06/12/18 13:57

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Client Sample ID: W-1
Date Collected: 06/11/18 18:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 18:52	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 18:52	1
Barium	0.0096		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 18:52	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 18:52	1
Calcium	340		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 18:52	1
Cadmium	ND		0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 18:52	1
Cobalt	0.00080	J	0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 18:52	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 18:52	1
Molybdenum	0.0046	J	0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 18:52	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 18:52	1
Selenium	0.011		0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 18:52	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 18:52	1
Lithium	0.28		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 18:52	1

Client Sample ID: W-2
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 18:56	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 18:56	1
Barium	0.0055		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 18:56	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 18:56	1
Calcium	370		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 18:56	1
Cadmium	ND		0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 18:56	1
Cobalt	0.0011		0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 18:56	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 18:56	1
Molybdenum	0.0040	J	0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 18:56	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 18:56	1
Selenium	0.0038	J	0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 18:56	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 18:56	1
Lithium	0.72		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 18:56	1

Client Sample ID: W-3
Date Collected: 06/11/18 15:10
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 19:00	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 19:00	1
Barium	0.0066		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 19:00	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 19:00	1
Calcium	390		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 19:00	1
Cadmium	0.00041	J	0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 19:00	1
Cobalt	0.0018		0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 19:00	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 19:00	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 19:00	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 19:00	1
Selenium	0.018		0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 19:00	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 19:00	1
Lithium	1.8		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 19:00	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Client Sample ID: W-4
Date Collected: 06/11/18 17:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 19:05	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 19:05	1
Barium	0.0093		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 19:05	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 19:05	1
Calcium	370		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 19:05	1
Cadmium	0.00033	J	0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 19:05	1
Cobalt	0.0061		0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 19:05	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 19:05	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 19:05	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 19:05	1
Selenium	0.0027	J	0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 19:05	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 19:05	1
Lithium	0.93		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 19:05	1

Client Sample ID: W-2D
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 19:09	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 19:09	1
Barium	0.0053		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 19:09	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 19:09	1
Calcium	360		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 19:09	1
Cadmium	ND		0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 19:09	1
Cobalt	0.0011		0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 19:09	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 19:09	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 19:09	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 19:09	1
Selenium	0.0046	J	0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 19:09	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 19:09	1
Lithium	0.70		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 19:09	1

Client Sample ID: 2-3EB
Date Collected: 06/11/18 15:25
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 19:23	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 19:23	1
Barium	ND		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 19:23	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 19:23	1
Calcium	ND		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 19:23	1
Cadmium	ND		0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 19:23	1
Cobalt	ND		0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 19:23	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 19:23	1
Molybdenum	ND		0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 19:23	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 19:23	1
Selenium	0.0017	J	0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 19:23	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 19:23	1
Lithium	ND		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 19:23	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 06/11/18 18:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/03/18 14:00	07/05/18 11:28	1

Client Sample ID: W-2
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/03/18 14:00	07/05/18 11:30	1

Client Sample ID: W-3
Date Collected: 06/11/18 15:10
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/03/18 14:00	07/05/18 11:32	1

Client Sample ID: W-4
Date Collected: 06/11/18 17:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/03/18 14:00	07/05/18 11:34	1

Client Sample ID: W-2D
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/03/18 14:00	07/05/18 11:36	1

Client Sample ID: 2-3EB
Date Collected: 06/11/18 15:25
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/03/18 14:00	07/05/18 11:42	1

General Chemistry

Client Sample ID: W-1
Date Collected: 06/11/18 18:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-1
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	-		06/30/18 10:26	1
Temperature	19.2	HF	1.0	1.0	Degrees C			06/30/18 10:26	1
Chloride	43		15	1.3	mg/L			07/03/18 15:34	5
Fluoride	ND		2.5	0.30	mg/L			07/03/18 15:34	5
Fluoride	ND		2.5	0.30	mg/L			07/03/18 15:34	5
Sulfate	2700		100	4.6	mg/L			07/09/18 23:13	20
Total Dissolved Solids (TDS)	4500	B	40	19	mg/L			06/18/18 11:51	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			06/15/18 07:50	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

General Chemistry

Client Sample ID: W-2
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			06/30/18 10:34	1
Temperature	18.4	HF	1.0	1.0	Degrees C			06/30/18 10:34	1
Chloride	81		15	1.3	mg/L			07/03/18 15:52	5
Fluoride	0.53	J	2.5	0.30	mg/L			07/03/18 15:52	5
Fluoride	0.53	J	2.5	0.30	mg/L			07/03/18 15:52	5
Sulfate	4300		250	12	mg/L			07/09/18 23:35	50
Total Dissolved Solids (TDS)	7200	B	40	19	mg/L			06/18/18 11:51	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			06/15/18 07:50	1

Client Sample ID: W-3
Date Collected: 06/11/18 15:10
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/30/18 10:38	1
Temperature	18.7	HF	1.0	1.0	Degrees C			06/30/18 10:38	1
Chloride	190		15	1.3	mg/L			07/07/18 21:46	5
Fluoride	0.51	J	2.5	0.30	mg/L			07/07/18 21:46	5
Fluoride	0.51	J	2.5	0.30	mg/L			07/07/18 21:46	5
Sulfate	7900		500	23	mg/L			07/07/18 22:08	100
Total Dissolved Solids (TDS)	13000	B	100	47	mg/L			06/18/18 11:51	1
Total Suspended Solids	7.2		4.0	1.1	mg/L			06/15/18 07:50	1

Client Sample ID: W-4
Date Collected: 06/11/18 17:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			06/30/18 10:42	1
Temperature	19.0	HF	1.0	1.0	Degrees C			06/30/18 10:42	1
Chloride	380		30	2.5	mg/L			07/07/18 22:30	10
Fluoride	ND		5.0	0.60	mg/L			07/07/18 22:30	10
Fluoride	ND		5.0	0.60	mg/L			07/07/18 22:30	10
Sulfate	13000		500	23	mg/L			07/07/18 22:52	100
Total Dissolved Solids (TDS)	25000	B	200	94	mg/L			06/18/18 11:51	1
Total Suspended Solids	8.8		4.0	1.1	mg/L			06/15/18 07:50	1

Client Sample ID: W-2D
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			06/30/18 10:46	1
Temperature	19.0	HF	1.0	1.0	Degrees C			06/30/18 10:46	1
Chloride	80		6.0	0.51	mg/L			07/08/18 00:21	2
Fluoride	0.42	J	1.0	0.12	mg/L			07/08/18 00:21	2
Fluoride	0.42	J	1.0	0.12	mg/L			07/08/18 00:21	2
Sulfate	4400		250	12	mg/L			07/08/18 00:44	50
Total Dissolved Solids (TDS)	7300	B	40	19	mg/L			06/18/18 11:51	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			06/15/18 07:50	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

General Chemistry

Client Sample ID: 2-3EB
Date Collected: 06/11/18 15:25
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-6
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			07/05/18 11:48	1
Temperature	18.9	HF	1.0	1.0	Degrees C			07/05/18 11:48	1
Chloride	ND		3.0	0.25	mg/L			07/07/18 23:15	1
Fluoride	ND		0.50	0.060	mg/L			07/07/18 23:15	1
Fluoride	ND		0.50	0.060	mg/L			07/07/18 23:15	1
Sulfate	ND		5.0	0.23	mg/L			07/07/18 23:15	1
Total Dissolved Solids (TDS)	ND		20	9.4	mg/L			06/18/18 11:51	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/15/18 07:50	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 06/11/18 18:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.149	U	0.166	0.166	1.00	0.264	pCi/L	06/19/18 14:42	07/13/18 05:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					06/19/18 14:42	07/13/18 05:37	1

Client Sample ID: W-2
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.129	U	0.156	0.157	1.00	0.255	pCi/L	06/19/18 14:42	07/13/18 05:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					06/19/18 14:42	07/13/18 05:37	1

Client Sample ID: W-3
Date Collected: 06/11/18 15:10
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.193	U	0.170	0.170	1.00	0.248	pCi/L	06/19/18 14:42	07/13/18 05:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					06/19/18 14:42	07/13/18 05:38	1

Client Sample ID: W-4
Date Collected: 06/11/18 17:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0945	U	0.150	0.150	1.00	0.262	pCi/L	06/19/18 14:42	07/13/18 05:38	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	06/19/18 14:42	07/13/18 05:38	1

Client Sample ID: W-2D	Lab Sample ID: 280-110845-5
Date Collected: 06/11/18 16:30	Matrix: Water
Date Received: 06/12/18 13:57	

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0128	U	0.118	0.118	1.00	0.250	pCi/L	06/19/18 14:42	07/13/18 05:38	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	06/19/18 14:42	07/13/18 05:38	1

Client Sample ID: 2-3EB	Lab Sample ID: 280-110845-6
Date Collected: 06/11/18 15:25	Matrix: Water
Date Received: 06/12/18 13:57	

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0130	U	0.0918	0.0918	1.00	0.226	pCi/L	06/19/18 14:42	07/13/18 05:38	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	06/19/18 14:42	07/13/18 05:38	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1	Lab Sample ID: 280-110845-1
Date Collected: 06/11/18 18:45	Matrix: Water
Date Received: 06/12/18 13:57	

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.291	U	0.327	0.328	1.00	0.537	pCi/L	06/19/18 15:12	07/12/18 14:26	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	06/19/18 15:12	07/12/18 14:26	1
Y Carrier	89.0		40 - 110	06/19/18 15:12	07/12/18 14:26	1

Client Sample ID: W-2	Lab Sample ID: 280-110845-2
Date Collected: 06/11/18 16:30	Matrix: Water
Date Received: 06/12/18 13:57	

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.175	U	0.328	0.328	1.00	0.555	pCi/L	06/19/18 15:12	07/12/18 14:26	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	06/19/18 15:12	07/12/18 14:26	1
Y Carrier	89.3		40 - 110	06/19/18 15:12	07/12/18 14:26	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-3
Date Collected: 06/11/18 15:10
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.500		0.317	0.320	1.00	0.489	pCi/L	06/19/18 15:12	07/12/18 14:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					06/19/18 15:12	07/12/18 14:26	1
Y Carrier	89.0		40 - 110					06/19/18 15:12	07/12/18 14:26	1

Client Sample ID: W-4
Date Collected: 06/11/18 17:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.343	U	0.323	0.325	1.00	0.524	pCi/L	06/19/18 15:12	07/12/18 14:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/19/18 15:12	07/12/18 14:26	1
Y Carrier	89.0		40 - 110					06/19/18 15:12	07/12/18 14:26	1

Client Sample ID: W-2D
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.466	U	0.323	0.326	1.00	0.503	pCi/L	06/19/18 15:12	07/12/18 14:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					06/19/18 15:12	07/12/18 14:27	1
Y Carrier	85.2		40 - 110					06/19/18 15:12	07/12/18 14:27	1

Client Sample ID: 2-3EB
Date Collected: 06/11/18 15:25
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0324	U	0.242	0.242	1.00	0.430	pCi/L	06/19/18 15:12	07/12/18 14:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					06/19/18 15:12	07/12/18 14:27	1
Y Carrier	92.7		40 - 110					06/19/18 15:12	07/12/18 14:27	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Client Sample ID: W-1
Date Collected: 06/11/18 18:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.440	U	0.367	0.368	5.00	0.537	pCi/L		07/19/18 11:31	1

Client Sample ID: W-2
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.304	U	0.363	0.364	5.00	0.555	pCi/L		07/19/18 11:31	1

Client Sample ID: W-3
Date Collected: 06/11/18 15:10
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.693		0.360	0.362	5.00	0.489	pCi/L		07/19/18 11:31	1

Client Sample ID: W-4
Date Collected: 06/11/18 17:45
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.437	U	0.356	0.358	5.00	0.524	pCi/L		07/19/18 11:31	1

Client Sample ID: W-2D
Date Collected: 06/11/18 16:30
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.479	U	0.344	0.347	5.00	0.503	pCi/L		07/19/18 11:31	1

Client Sample ID: 2-3EB
Date Collected: 06/11/18 15:25
Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0194	U	0.259	0.259	5.00	0.430	pCi/L		07/19/18 11:31	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-110845-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-331855/1-A

Matrix: Water

Analysis Batch: 332270

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 331855

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/15/18 14:00	06/18/18 17:40	1
Arsenic	ND		0.0050	0.00075	mg/L		06/15/18 14:00	06/18/18 17:40	1
Barium	ND		0.0050	0.0022	mg/L		06/15/18 14:00	06/18/18 17:40	1
Beryllium	ND		0.0010	0.00031	mg/L		06/15/18 14:00	06/18/18 17:40	1
Calcium	ND		1.0	0.58	mg/L		06/15/18 14:00	06/18/18 17:40	1
Cadmium	ND		0.0010	0.00021	mg/L		06/15/18 14:00	06/18/18 17:40	1
Cobalt	ND		0.0010	0.00019	mg/L		06/15/18 14:00	06/18/18 17:40	1
Chromium	ND		0.0020	0.00098	mg/L		06/15/18 14:00	06/18/18 17:40	1
Molybdenum	ND		0.010	0.0011	mg/L		06/15/18 14:00	06/18/18 17:40	1
Lead	ND		0.0010	0.00045	mg/L		06/15/18 14:00	06/18/18 17:40	1
Selenium	ND		0.0050	0.00089	mg/L		06/15/18 14:00	06/18/18 17:40	1
Thallium	ND		0.0010	0.00020	mg/L		06/15/18 14:00	06/18/18 17:40	1
Lithium	ND		0.0080	0.0017	mg/L		06/15/18 14:00	06/18/18 17:40	1

Lab Sample ID: LCS 240-331855/2-A

Matrix: Water

Analysis Batch: 332270

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 331855

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	0.100	0.0978		mg/L		98	80 - 120
Arsenic	1.00	0.967		mg/L		97	80 - 120
Barium	1.00	0.943		mg/L		94	80 - 120
Beryllium	1.00	0.938		mg/L		94	80 - 120
Calcium	10.0	9.80		mg/L		98	80 - 120
Cadmium	1.00	0.982		mg/L		98	80 - 120
Cobalt	1.00	0.975		mg/L		98	80 - 120
Chromium	1.00	0.951		mg/L		95	80 - 120
Molybdenum	0.100	0.0948		mg/L		95	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120
Selenium	1.00	0.980		mg/L		98	80 - 120
Thallium	0.250	0.252		mg/L		101	80 - 120
Lithium	0.100	0.0938		mg/L		94	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-334583/1-A

Matrix: Water

Analysis Batch: 334843

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 334583

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		07/03/18 14:00	07/05/18 11:17	1

Lab Sample ID: LCS 240-334583/2-A

Matrix: Water

Analysis Batch: 334843

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 334583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	5.00	4.72		ug/L		94	80 - 120

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-110845-1

Method: 9040B - pH

Lab Sample ID: LCS 280-421036/4

Matrix: Water

Analysis Batch: 421036

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: 280-110845-1 DU

Matrix: Water

Analysis Batch: 421036

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.7	HF	7.7		SU		0.1	5
Temperature	19.2	HF	18.8		Degrees C		2	10

Lab Sample ID: LCS 280-421184/4

Matrix: Water

Analysis Batch: 421184

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 280-420939/15

Matrix: Water

Analysis Batch: 420939

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			07/03/18 12:54	1
Fluoride	ND		0.50	0.060	mg/L			07/03/18 12:54	1
Sulfate	ND		5.0	0.23	mg/L			07/03/18 12:54	1

Lab Sample ID: LCS 280-420939/13

Matrix: Water

Analysis Batch: 420939

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	98.8		mg/L		99	90 - 110
Fluoride	5.00	5.16		mg/L		103	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-420939/14

Matrix: Water

Analysis Batch: 420939

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	98.2		mg/L		98	90 - 110	1	10
Fluoride	5.00	5.14		mg/L		103	90 - 110	0	10
Sulfate	100	99.7		mg/L		100	90 - 110	1	10

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Lab Sample ID: MRL 280-420939/3

Matrix: Water

Analysis Batch: 420939

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	2.49	J	mg/L		100	50 - 150
Fluoride	0.200	0.164	J	mg/L		82	50 - 150
Sulfate	2.50	2.38	J	mg/L		95	50 - 150

Lab Sample ID: MB 280-421388/6

Matrix: Water

Analysis Batch: 421388

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			07/07/18 12:09	1
Fluoride	ND		0.50	0.060	mg/L			07/07/18 12:09	1
Sulfate	ND		5.0	0.23	mg/L			07/07/18 12:09	1

Lab Sample ID: LCS 280-421388/4

Matrix: Water

Analysis Batch: 421388

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	95.8		mg/L		96	90 - 110
Fluoride	5.00	5.23		mg/L		105	90 - 110
Sulfate	100	95.7		mg/L		96	90 - 110

Lab Sample ID: LCSD 280-421388/5

Matrix: Water

Analysis Batch: 421388

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	95.9		mg/L		96	90 - 110	0	10
Fluoride	5.00	5.25		mg/L		105	90 - 110	0	10
Sulfate	100	95.7		mg/L		96	90 - 110	0	10

Lab Sample ID: MRL 280-421388/3

Matrix: Water

Analysis Batch: 421388

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	2.39	J	mg/L		96	50 - 150
Fluoride	0.200	0.174	J	mg/L		87	50 - 150
Sulfate	2.50	2.14	J	mg/L		86	50 - 150

Lab Sample ID: MB 280-421505/6

Matrix: Water

Analysis Batch: 421505

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			07/09/18 17:38	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Lab Sample ID: LCS 280-421505/4

Matrix: Water

Analysis Batch: 421505

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

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

Lab Sample ID: LCSD 280-421505/5

Matrix: Water

Analysis Batch: 421505

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	103		mg/L		103	90 - 110	0	10

Lab Sample ID: MRL 280-421505/3

Matrix: Water

Analysis Batch: 421505

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	2.45	J	mg/L		98	50 - 150

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

Lab Sample ID: MB 280-418963/1

Matrix: Water

Analysis Batch: 418963

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)	7.00	J	10	4.7	mg/L			06/18/18 11:51	1

Lab Sample ID: LCS 280-418963/2

Matrix: Water

Analysis Batch: 418963

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	504		mg/L		101	86 - 110

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

Lab Sample ID: MB 280-418695/1

Matrix: Water

Analysis Batch: 418695

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			06/15/18 07:50	1

Lab Sample ID: LCS 280-418695/2

Matrix: Water

Analysis Batch: 418695

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-110845-1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-371257/23-A
Matrix: Water
Analysis Batch: 375306

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371257

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2180	U	0.310	0.311	1.00	0.527	pCi/L	06/19/18 14:42	07/13/18 05:41	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					06/19/18 14:42	07/13/18 05:41	1

Lab Sample ID: LCS 160-371257/1-A
Matrix: Water
Analysis Batch: 375307

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371257

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226		23.6	21.85		2.63	1.00	0.330	pCi/L	93	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	107		40 - 110							

Lab Sample ID: LCSD 160-371257/2-A
Matrix: Water
Analysis Batch: 375307

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 371257

Analyte		Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226		23.6	21.47		2.59	1.00	0.478	pCi/L	91	68 - 137	0.07	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits									
Ba Carrier	104		40 - 110									

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-371263/23-A
Matrix: Water
Analysis Batch: 375103

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371263

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1158	U	0.366	0.366	1.00	0.640	pCi/L	06/19/18 15:12	07/12/18 14:28	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					06/19/18 15:12	07/12/18 14:28	1
Y Carrier	91.2		40 - 110					06/19/18 15:12	07/12/18 14:28	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-110845-1

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

Lab Sample ID: LCS 160-371263/1-A

Matrix: Water

Analysis Batch: 375135

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 371263

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	16.3	17.59		2.05	1.00	0.760	pCi/L	108	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	107		40 - 110
Y Carrier	83.0		40 - 110

Lab Sample ID: LCSD 160-371263/2-A

Matrix: Water

Analysis Batch: 375135

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 371263

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	16.3	16.80		1.97	1.00	0.677	pCi/L	103	56 - 140	0.20	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	104		40 - 110
Y Carrier	87.5		40 - 110

QC Association Summary

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

TestAmerica Job ID: 280-110845-1

Metals

Prep Batch: 331855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total Recoverable	Water	3005A	
280-110845-2	W-2	Total Recoverable	Water	3005A	
280-110845-3	W-3	Total Recoverable	Water	3005A	
280-110845-4	W-4	Total Recoverable	Water	3005A	
280-110845-5	W-2D	Total Recoverable	Water	3005A	
280-110845-6	2-3EB	Total Recoverable	Water	3005A	
MB 240-331855/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-331855/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 332270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total Recoverable	Water	6020A	331855
280-110845-2	W-2	Total Recoverable	Water	6020A	331855
280-110845-3	W-3	Total Recoverable	Water	6020A	331855
280-110845-4	W-4	Total Recoverable	Water	6020A	331855
280-110845-5	W-2D	Total Recoverable	Water	6020A	331855
280-110845-6	2-3EB	Total Recoverable	Water	6020A	331855
MB 240-331855/1-A	Method Blank	Total Recoverable	Water	6020A	331855
LCS 240-331855/2-A	Lab Control Sample	Total Recoverable	Water	6020A	331855

Prep Batch: 334583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	7470A	
280-110845-2	W-2	Total/NA	Water	7470A	
280-110845-3	W-3	Total/NA	Water	7470A	
280-110845-4	W-4	Total/NA	Water	7470A	
280-110845-5	W-2D	Total/NA	Water	7470A	
280-110845-6	2-3EB	Total/NA	Water	7470A	
MB 240-334583/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-334583/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 334843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	7470A	334583
280-110845-2	W-2	Total/NA	Water	7470A	334583
280-110845-3	W-3	Total/NA	Water	7470A	334583
280-110845-4	W-4	Total/NA	Water	7470A	334583
280-110845-5	W-2D	Total/NA	Water	7470A	334583
280-110845-6	2-3EB	Total/NA	Water	7470A	334583
MB 240-334583/1-A	Method Blank	Total/NA	Water	7470A	334583
LCS 240-334583/2-A	Lab Control Sample	Total/NA	Water	7470A	334583

General Chemistry

Analysis Batch: 418695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	SM 2540D	
280-110845-2	W-2	Total/NA	Water	SM 2540D	
280-110845-3	W-3	Total/NA	Water	SM 2540D	
280-110845-4	W-4	Total/NA	Water	SM 2540D	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-110845-1

General Chemistry (Continued)

Analysis Batch: 418695 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-5	W-2D	Total/NA	Water	SM 2540D	
280-110845-6	2-3EB	Total/NA	Water	SM 2540D	
MB 280-418695/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-418695/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 418963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	SM 2540C	
280-110845-2	W-2	Total/NA	Water	SM 2540C	
280-110845-3	W-3	Total/NA	Water	SM 2540C	
280-110845-4	W-4	Total/NA	Water	SM 2540C	
280-110845-5	W-2D	Total/NA	Water	SM 2540C	
280-110845-6	2-3EB	Total/NA	Water	SM 2540C	
MB 280-418963/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-418963/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 420939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	9056A	
280-110845-2	W-2	Total/NA	Water	9056A	
MB 280-420939/15	Method Blank	Total/NA	Water	9056A	
LCS 280-420939/13	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-420939/14	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-420939/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 421036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	9040B	
280-110845-2	W-2	Total/NA	Water	9040B	
280-110845-3	W-3	Total/NA	Water	9040B	
280-110845-4	W-4	Total/NA	Water	9040B	
280-110845-5	W-2D	Total/NA	Water	9040B	
LCS 280-421036/4	Lab Control Sample	Total/NA	Water	9040B	
280-110845-1 DU	W-1	Total/NA	Water	9040B	

Analysis Batch: 421184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-6	2-3EB	Total/NA	Water	9040B	
LCS 280-421184/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 421388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-3	W-3	Total/NA	Water	9056A	
280-110845-3	W-3	Total/NA	Water	9056A	
280-110845-4	W-4	Total/NA	Water	9056A	
280-110845-4	W-4	Total/NA	Water	9056A	
280-110845-5	W-2D	Total/NA	Water	9056A	
280-110845-5	W-2D	Total/NA	Water	9056A	
280-110845-6	2-3EB	Total/NA	Water	9056A	
MB 280-421388/6	Method Blank	Total/NA	Water	9056A	
LCS 280-421388/4	Lab Control Sample	Total/NA	Water	9056A	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-110845-1

General Chemistry (Continued)

Analysis Batch: 421388 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 280-421388/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-421388/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 421505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	9056A	
280-110845-2	W-2	Total/NA	Water	9056A	
MB 280-421505/6	Method Blank	Total/NA	Water	9056A	
LCS 280-421505/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-421505/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-421505/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 371257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	PrecSep-21	
280-110845-2	W-2	Total/NA	Water	PrecSep-21	
280-110845-3	W-3	Total/NA	Water	PrecSep-21	
280-110845-4	W-4	Total/NA	Water	PrecSep-21	
280-110845-5	W-2D	Total/NA	Water	PrecSep-21	
280-110845-6	2-3EB	Total/NA	Water	PrecSep-21	
MB 160-371257/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-371257/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-371257/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 371263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-110845-1	W-1	Total/NA	Water	PrecSep_0	
280-110845-2	W-2	Total/NA	Water	PrecSep_0	
280-110845-3	W-3	Total/NA	Water	PrecSep_0	
280-110845-4	W-4	Total/NA	Water	PrecSep_0	
280-110845-5	W-2D	Total/NA	Water	PrecSep_0	
280-110845-6	2-3EB	Total/NA	Water	PrecSep_0	
MB 160-371263/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-371263/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-371263/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-110845-1

Client Sample ID: W-1

Date Collected: 06/11/18 18:45

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-1

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	331855	06/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			332270	06/18/18 18:52	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	334583	07/03/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			334843	07/05/18 11:28	AJC	TAL CAN
Total/NA	Analysis	9040B		1			421036	06/30/18 10:26	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	420939	07/03/18 15:34	CCJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	421505	07/09/18 23:13	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	418963	06/18/18 11:51	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	418695	06/15/18 07:50	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.14 mL	1.0 g	371257	06/19/18 14:42	JLC	TAL SL
Total/NA	Analysis	9315		1			375309	07/13/18 05:37	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.14 mL	1.0 g	371263	06/19/18 15:12	JLC	TAL SL
Total/NA	Analysis	9320		1			375135	07/12/18 14:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			376619	07/19/18 11:31	RTM	TAL SL

Client Sample ID: W-2

Date Collected: 06/11/18 16:30

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-2

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	331855	06/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			332270	06/18/18 18:56	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	334583	07/03/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			334843	07/05/18 11:30	AJC	TAL CAN
Total/NA	Analysis	9040B		1			421036	06/30/18 10:34	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	420939	07/03/18 15:52	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	421505	07/09/18 23:35	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	418963	06/18/18 11:51	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	418695	06/15/18 07:50	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.93 mL	1.0 g	371257	06/19/18 14:42	JLC	TAL SL
Total/NA	Analysis	9315		1			375309	07/13/18 05:37	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.93 mL	1.0 g	371263	06/19/18 15:12	JLC	TAL SL
Total/NA	Analysis	9320		1			375135	07/12/18 14:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			376619	07/19/18 11:31	RTM	TAL SL

Client Sample ID: W-3

Date Collected: 06/11/18 15:10

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3

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	331855	06/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			332270	06/18/18 19:00	RKT	TAL CAN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-110845-1

Client Sample ID: W-3

Date Collected: 06/11/18 15:10

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			50 mL	50 mL	334583	07/03/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			334843	07/05/18 11:32	AJC	TAL CAN
Total/NA	Analysis	9040B		1			421036	06/30/18 10:38	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	421388	07/07/18 21:46	TLP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	421388	07/07/18 22:08	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	418963	06/18/18 11:51	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	418695	06/15/18 07:50	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.13 mL	1.0 g	371257	06/19/18 14:42	JLC	TAL SL
Total/NA	Analysis	9315		1			375308	07/13/18 05:38	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.13 mL	1.0 g	371263	06/19/18 15:12	JLC	TAL SL
Total/NA	Analysis	9320		1			375135	07/12/18 14:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			376619	07/19/18 11:31	RTM	TAL SL

Client Sample ID: W-4

Date Collected: 06/11/18 17:45

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-4

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	331855	06/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			332270	06/18/18 19:05	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	334583	07/03/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			334843	07/05/18 11:34	AJC	TAL CAN
Total/NA	Analysis	9040B		1			421036	06/30/18 10:42	LPL	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	421388	07/07/18 22:30	TLP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	421388	07/07/18 22:52	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	418963	06/18/18 11:51	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	418695	06/15/18 07:50	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.44 mL	1.0 g	371257	06/19/18 14:42	JLC	TAL SL
Total/NA	Analysis	9315		1			375308	07/13/18 05:38	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.44 mL	1.0 g	371263	06/19/18 15:12	JLC	TAL SL
Total/NA	Analysis	9320		1			375135	07/12/18 14:26	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			376619	07/19/18 11:31	RTM	TAL SL

Client Sample ID: W-2D

Date Collected: 06/11/18 16:30

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5

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	331855	06/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			332270	06/18/18 19:09	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	334583	07/03/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			334843	07/05/18 11:36	AJC	TAL CAN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-110845-1

Client Sample ID: W-2D

Date Collected: 06/11/18 16:30

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9040B		1			421036	06/30/18 10:46	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	421388	07/08/18 00:21	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	421388	07/08/18 00:44	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	418963	06/18/18 11:51	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	418695	06/15/18 07:50	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.97 mL	1.0 g	371257	06/19/18 14:42	JLC	TAL SL
Total/NA	Analysis	9315		1			375308	07/13/18 05:38	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.97 mL	1.0 g	371263	06/19/18 15:12	JLC	TAL SL
Total/NA	Analysis	9320		1			375135	07/12/18 14:27	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			376619	07/19/18 11:31	RTM	TAL SL

Client Sample ID: 2-3EB

Date Collected: 06/11/18 15:25

Date Received: 06/12/18 13:57

Lab Sample ID: 280-110845-6

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	331855	06/15/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			332270	06/18/18 19:23	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	334583	07/03/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			334843	07/05/18 11:42	AJC	TAL CAN
Total/NA	Analysis	9040B		1			421184	07/05/18 11:48	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	421388	07/07/18 23:15	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	418963	06/18/18 11:51	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	418695	06/15/18 07:50	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.17 mL	1.0 g	371257	06/19/18 14:42	JLC	TAL SL
Total/NA	Analysis	9315		1			375308	07/13/18 05:38	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.17 mL	1.0 g	371263	06/19/18 15:12	JLC	TAL SL
Total/NA	Analysis	9320		1			375135	07/12/18 14:27	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			376619	07/19/18 11:31	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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-110845-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

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

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-110845-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-17-11	07-31-18 *
US Fish & Wildlife	Federal		058448	07-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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

TestAmerica Denver

Chain of Custody Record

Client Information		Sample: <u>Tara Kent</u>	Lab File: <u>Rob Meyer, Stephanie K.</u>	Carrier Tracking No.:	COC No.:
Client Contact: <u>Anna Lundin</u>	Phone: <u>720 933 7496</u>	E-Mail: <u>stephanie.robmeier@testamerica.com</u>			Page: <u>1</u> of <u>1</u>
Company: <u>HDR Inc.</u>					Job #:
Address: <u>9781 S. Meridian Blvd Suite 400</u>	Due Date Requested:	Analysis Requested:			
City: <u>Englewood</u>	TAT Requested (days):				
State: <u>CO</u>	Standard:				
CO: <u>80112</u>					
Phone: <u>720-633-2390 (Tel)</u>	PO #:				
Email: <u>anna.lundin@hdrinc.com</u>	DEM: <u>001</u>				
Project Name: <u>Xcel Energy GW COR Monitoring - Hayden</u>	W.O. #:				
Site: <u>Colorado</u>	Project #: <u>28014377</u>				
	SSOWF:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Gravel, L=Leachate, etc.)	Matrix (Metal, Solid, Composite, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	Metals - 6020A, 7470A	pH - 9040B, Antons - 9056A, 28D	2540D - Total Suspended Solids	9315, Ra226, 9320, Ra228	Total Number of Containers	Special Instructions/Note:
W-1	6-11-18	1845	G	Water	N	N	✓	✓	✓	✓	✓	5	Analysis for Appendix III & IV plus TSS
W-2	6-11-18	1630	G	Water	N	N	✓	✓	✓	✓	✓	5	
W-3	6-11-18	1510	G	Water	N	N	✓	✓	✓	✓	✓	5	
W-4	6-11-18	1745	G	Water	N	N	✓	✓	✓	✓	✓	5	
Equipped Blower W-2D	6-11-18	1630	G	Water	N	N	✓	✓	✓	✓	✓	5	
Equipped Blower W-3ER	6-11-18	1525	G	Water	N	N	✓	✓	✓	✓	✓	5	



350-110845 Chain of Custody

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
☒ Non-Hazard	☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client	☒ Dispose By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (Specify):		Special Instructions/IOC Requirements:	
Empty Kit Relinquished by: <u>Tara Kent</u>	Date: <u>6-12-18</u>	Time: <u>1357</u>	Method of Shipment:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Custody Seals Intact: <u>A Yes A No</u>	Custody Seal No:	Custody Temperature(s) C and Other Remarks: <u>33.3, 5.00, 10.00, 20.00, 30.00, 40.00, 50.00, 60.00, 70.00, 80.00, 90.00, 100.00, 110.00, 120.00, 130.00, 140.00, 150.00, 160.00, 170.00, 180.00, 190.00, 200.00, 210.00, 220.00, 230.00, 240.00, 250.00, 260.00, 270.00, 280.00, 290.00, 300.00, 310.00, 320.00, 330.00, 340.00, 350.00, 360.00, 370.00, 380.00, 390.00, 400.00, 410.00, 420.00, 430.00, 440.00, 450.00, 460.00, 470.00, 480.00, 490.00, 500.00, 510.00, 520.00, 530.00, 540.00, 550.00, 560.00, 570.00, 580.00, 590.00, 600.00, 610.00, 620.00, 630.00, 640.00, 650.00, 660.00, 670.00, 680.00, 690.00, 700.00, 710.00, 720.00, 730.00, 740.00, 750.00, 760.00, 770.00, 780.00, 790.00, 800.00, 810.00, 820.00, 830.00, 840.00, 850.00, 860.00, 870.00, 880.00, 890.00, 900.00, 910.00, 920.00, 930.00, 940.00, 950.00, 960.00, 970.00, 980.00, 990.00, 1000.00</u>	

TestAmerica

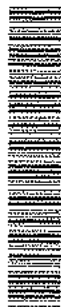
A series of 15 horizontal bars of varying lengths and patterns, representing a barcode or a sequence of data. The bars are arranged vertically and vary in their internal structure, with some being solid black and others having internal patterns or gaps.

1. *Phragmites australis* (Cav.) Trin. ex Steud.

Phone (303) 736-0100 Fax (303) 431-7171

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Chain of Custody Record



OSCE

[illegible][illegible]

TestAmerica Canton Sample Receipt Form/Narrative

Login #: _____

Canton Facility

Client Danver

Site Name _____

Cooler unpacked by: _____

Cooler Received on 6.14.18Opened on 6.14.18FedEx: 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 FormIR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 18.0 °C Corrected Cooler Temp. 18.0 °C

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

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

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No

-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA

-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No

-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No

4. Did custody papers accompany the sample(s)? Yes No

5. Were the custody papers relinquished & signed in the appropriate place? Yes No

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No

7. Did all bottles arrive in good condition (Unbroken)? Yes No

8. Could all bottle labels be reconciled with the COC? Yes No

9. Were correct bottle(s) used for the test(s) indicated? Yes No

10. Sufficient quantity received to perform indicated analyses? Yes No

11. Are these work share samples? Yes No

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC740840

13. Were VOAs on the COC? Yes No

14. Were air bubbles >6 mm in any VOA vials? ☒ Larger than this. Yes No NA

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

16. Was a LL Hg or Me Hg trip blank present? Yes No

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

Concerning _____

Tests that are not
checked for pH by
Receiving:VOAs
Oil and Grease
TOC

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

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

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

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

19. SAMPLE PRESERVATION

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

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

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-110845-1

Login Number: 110845

List Number: 1

Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (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: 280-110845-1

Login Number: 110845

List Number: 2

Creator: Press, Nicholas B

List Source: TestAmerica St. Louis

List Creation: 06/14/18 10:50 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-110845-1

Login Number: 110845

List Number: 3

Creator: Press, Nicholas B

List Source: TestAmerica St. Louis

List Creation: 06/14/18 10:51 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-110845-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-110845-1	W-1	100	
280-110845-2	W-2	105	
280-110845-3	W-3	108	
280-110845-4	W-4	104	
280-110845-5	W-2D	106	
280-110845-6	2-3EB	106	
LCS 160-371257/1-A	Lab Control Sample	107	
LCSD 160-371257/2-A	Lab Control Sample Dup	104	
MB 160-371257/23-A	Method Blank	103	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-110845-1	W-1	100	89.0
280-110845-2	W-2	105	89.3
280-110845-3	W-3	108	89.0
280-110845-4	W-4	104	89.0
280-110845-5	W-2D	106	85.2
280-110845-6	2-3EB	106	92.7
LCS 160-371263/1-A	Lab Control Sample	107	83.0
LCSD 160-371263/2-A	Lab Control Sample Dup	104	87.5
MB 160-371263/23-A	Method Blank	103	91.2
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-111779-1

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

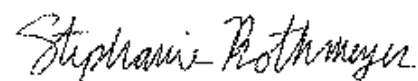
For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

8/20/2018 12:23:19 PM

Stephanie Rothmeyer, Project Manager I

(303)736-0182

stephanie.rothmeyer@testamericainc.com

LINKS

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results through

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www.testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-111779-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
B	Compound was found in the blank and sample.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-111779-1

Job ID: 280-111779-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-111779-1

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 7/11/2018 at 8:41 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.6° C and 9.6° C.

The following samples were received in 1 out of temp cooler at 9.6C: W-3 (280-111779-3): 1) One of One samples for 2540 C, pH, 2540 D, Metals and 9315; W-2D (280-111779-5): 1) One of One samples for 2540 C, pH, 2540 D, Metals and 9315; W-2 (280-111779-2): 1) One of One samples for 2540 C, pH, Metals and 9315; W-3EB (280-111779-6): 1) One of One samples for 2540 C, and pH.

TOTAL RECOVERABLE METALS

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/10/2018 and analyzed on 08/13/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/13/2018 and analyzed on 07/17/2018.

Beryllium and Cadmium were detected in method blank MB 240-336095/1-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.

The CCB was greater than or equal to the reporting limit for Antimony. Since the sample results were below the requested reporting limit, the results were accepted: W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5), W-3EB (280-111779-6).

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

TOTAL MERCURY

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 07/13/2018 and analyzed on 07/16/2018.

Case Narrative

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

TestAmerica Job ID: 280-111779-1

Job ID: 280-111779-1 (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 W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 07/11/2018.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 07/12/2018.

Total Suspended Solids exceeded the RPD limit for the duplicate of sample 280-111778-1. 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 W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 07/14/2018 and 07/18/2018.

The following sample failed to reach constant pH after 3 replicates: W-3EB (280-111779-6).

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

ANIONS (28 DAYS)

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 07/23/2018 and 07/24/2018.

Chloride and Sulfate were detected in method blank MB 280-423188/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Fluoride failed the recovery criteria high for the MSD of sample 280-111493-11 in batch 280-423188. Refer to the QC report for details.

Samples W-1 (280-111779-1)[2X], W-1 (280-111779-1)[20X], W-2 (280-111779-2)[2X], W-2 (280-111779-2)[50X], W-3 (280-111779-3)[100X], W-3 (280-111779-3)[5X], W-4 (280-111779-4)[200X], W-4 (280-111779-4)[5X], W-2D (280-111779-5)[2X] and W-2D (280-111779-5)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 07/13/2018 and analyzed on 08/08/2018.

Radium-226 was detected in method blank MB 160-375564/15-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Insufficient sample volume was available to perform a sample duplicate (DUP) for batch 160-375564.

Sample aliquots were reduced due to limited sample volume: W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4

Case Narrative

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

TestAmerica Job ID: 280-111779-1

Job ID: 280-111779-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

(280-111779-4), W-2D (280-111779-5), W-3EB (280-111779-6).

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

RADIUM-228

Samples W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 07/13/2018 and analyzed on 07/27/2018.

Insufficient sample volume was available to perform a sample duplicate (DUP) for batch 160-375578.

Sample aliquots were reduced due to limited sample volume: W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5), W-3EB (280-111779-6).

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 W-1 (280-111779-1), W-2 (280-111779-2), W-3 (280-111779-3), W-4 (280-111779-4), W-2D (280-111779-5) and W-3EB (280-111779-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 08/16/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-1

Lab Sample ID: 280-111779-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.50		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0091		0.0050	0.0022	mg/L	1			6020A	Recoverable Total
Cobalt	0.00082	J	0.0010	0.00019	mg/L	1			6020A	Recoverable Total
Molybdenum	0.0029	J	0.010	0.0011	mg/L	1			6020A	Recoverable Total
Lead	0.0017		0.0010	0.00045	mg/L	1			6020A	Recoverable Total
Selenium	0.0078		0.0050	0.00089	mg/L	1			6020A	Recoverable Total
Lithium	0.25		0.0080	0.0017	mg/L	1			6020A	Recoverable Total
Calcium	300		1.0	0.58	mg/L	1			6020A	Recoverable Total
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	19.2	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	42	B	6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.36	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	2700	B	100	4.6	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-111779-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	7.8		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0049	J	0.0050	0.0022	mg/L	1			6020A	Recoverable Total
Cobalt	0.0011		0.0010	0.00019	mg/L	1			6020A	Recoverable Total
Molybdenum	0.0028	J	0.010	0.0011	mg/L	1			6020A	Recoverable Total
Lead	0.0016		0.0010	0.00045	mg/L	1			6020A	Recoverable Total
Selenium	0.0029	J	0.0050	0.00089	mg/L	1			6020A	Recoverable Total
Lithium	0.61		0.0080	0.0017	mg/L	1			6020A	Recoverable Total
Calcium	310		1.0	0.58	mg/L	1			6020A	Recoverable Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	19.5	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	83	B	6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.56	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	4400	B	250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	6900		100	47	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-111779-3

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-3 (Continued)

Lab Sample ID: 280-111779-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.89		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0064		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00032	J B	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0017		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0027	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lead	0.00083	J	0.0010	0.00045	mg/L	1		6020A	Total Recoverable
Selenium	0.016		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	1.8		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	120		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190	B	15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.81	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	7800	B	500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	12000		100	47	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: W-4

Lab Sample ID: 280-111779-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.92		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0087		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00024	J B	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0062		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0011	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.91		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	78		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	380	B	15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.88	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	13000	B	1000	46	mg/L	200		9056A	Total/NA
Total Dissolved Solids (TDS)	20000		200	94	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: W-2D

Lab Sample ID: 280-111779-5

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-2D (Continued)

Lab Sample ID: 280-111779-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	8.0		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0055		0.0050	0.0022	mg/L	1			6020A	Recoverable
Cobalt	0.0012		0.0010	0.00019	mg/L	1			6020A	Total
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1			6020A	Recoverable
Selenium	0.0030	J	0.0050	0.00089	mg/L	1			6020A	Total
Lithium	0.77		0.0080	0.0017	mg/L	1			6020A	Recoverable
Calcium	190		1.0	0.58	mg/L	1			6020A	Total
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1			9040B	Recoverable
Temperature	19.0	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	82	B	6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.55	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	4500	B	250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	7100		100	47	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-3EB

Lab Sample ID: 280-111779-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Lithium	0.0017	J	0.0080	0.0017	mg/L	1			6020A	Total
pH adj. to 25 deg C	6.4	HF	0.1	0.1	SU	1			9040B	Recoverable
Temperature	20.2	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	0.46	J B	3.0	0.25	mg/L	1			9056A	Total/NA
Sulfate	0.56	J B	5.0	0.23	mg/L	1			9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-111779-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-111779-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-111779-1	W-1	Water	07/10/18 16:00	07/11/18 08:41
280-111779-2	W-2	Water	07/10/18 13:40	07/11/18 08:41
280-111779-3	W-3	Water	07/10/18 12:25	07/11/18 08:41
280-111779-4	W-4	Water	07/10/18 15:00	07/11/18 08:41
280-111779-5	W-2D	Water	07/10/18 13:40	07/11/18 08:41
280-111779-6	W-3EB	Water	07/10/18 12:45	07/11/18 08:41

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

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

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.50		0.10	0.023	mg/L	-	08/10/18 14:00	08/13/18 11:44	1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	7.8		0.10	0.023	mg/L	-	08/10/18 14:00	08/13/18 11:49	1

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.89		0.10	0.023	mg/L	-	08/10/18 14:00	08/13/18 11:12	1

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.92		0.10	0.023	mg/L	-	08/10/18 14:00	08/13/18 11:54	1

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.0		0.10	0.023	mg/L	-	08/10/18 14:00	08/13/18 11:59	1

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L	-	08/10/18 14:00	08/13/18 12:04	1

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

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Arsenic	ND		0.0050	0.00075	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Barium	0.0091		0.0050	0.0022	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Beryllium	ND		0.0010	0.00031	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Cadmium	ND		0.0010	0.00021	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Cobalt	0.00082	J	0.0010	0.00019	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Chromium	ND		0.0020	0.00098	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Molybdenum	0.0029	J	0.010	0.0011	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Lead	0.0017		0.0010	0.00045	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Selenium	0.0078		0.0050	0.00089	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Thallium	ND		0.0010	0.00020	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Lithium	0.25		0.0080	0.0017	mg/L	-	07/13/18 14:00	07/17/18 14:49	1
Calcium	300		1.0	0.58	mg/L	-	07/13/18 14:00	07/17/18 14:49	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/13/18 14:00	07/17/18 14:54	1
Arsenic	ND		0.0050	0.00075	mg/L		07/13/18 14:00	07/17/18 14:54	1
Barium	0.0049	J	0.0050	0.0022	mg/L		07/13/18 14:00	07/17/18 14:54	1
Beryllium	ND		0.0010	0.00031	mg/L		07/13/18 14:00	07/17/18 14:54	1
Cadmium	ND		0.0010	0.00021	mg/L		07/13/18 14:00	07/17/18 14:54	1
Cobalt	0.0011		0.0010	0.00019	mg/L		07/13/18 14:00	07/17/18 14:54	1
Chromium	ND		0.0020	0.00098	mg/L		07/13/18 14:00	07/17/18 14:54	1
Molybdenum	0.0028	J	0.010	0.0011	mg/L		07/13/18 14:00	07/17/18 14:54	1
Lead	0.0016		0.0010	0.00045	mg/L		07/13/18 14:00	07/17/18 14:54	1
Selenium	0.0029	J	0.0050	0.00089	mg/L		07/13/18 14:00	07/17/18 14:54	1
Thallium	ND		0.0010	0.00020	mg/L		07/13/18 14:00	07/17/18 14:54	1
Lithium	0.61		0.0080	0.0017	mg/L		07/13/18 14:00	07/17/18 14:54	1
Calcium	310		1.0	0.58	mg/L		07/13/18 14:00	07/17/18 14:54	1

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/13/18 14:00	07/17/18 14:58	1
Arsenic	ND		0.0050	0.00075	mg/L		07/13/18 14:00	07/17/18 14:58	1
Barium	0.0064		0.0050	0.0022	mg/L		07/13/18 14:00	07/17/18 14:58	1
Beryllium	ND		0.0010	0.00031	mg/L		07/13/18 14:00	07/17/18 14:58	1
Cadmium	0.00032	J B	0.0010	0.00021	mg/L		07/13/18 14:00	07/17/18 14:58	1
Cobalt	0.0017		0.0010	0.00019	mg/L		07/13/18 14:00	07/17/18 14:58	1
Chromium	ND		0.0020	0.00098	mg/L		07/13/18 14:00	07/17/18 14:58	1
Molybdenum	0.0027	J	0.010	0.0011	mg/L		07/13/18 14:00	07/17/18 14:58	1
Lead	0.00083	J	0.0010	0.00045	mg/L		07/13/18 14:00	07/17/18 14:58	1
Selenium	0.016		0.0050	0.00089	mg/L		07/13/18 14:00	07/17/18 14:58	1
Thallium	ND		0.0010	0.00020	mg/L		07/13/18 14:00	07/17/18 14:58	1
Lithium	1.8		0.0080	0.0017	mg/L		07/13/18 14:00	07/17/18 14:58	1
Calcium	120		1.0	0.58	mg/L		07/13/18 14:00	07/17/18 14:58	1

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/13/18 14:00	07/17/18 15:03	1
Arsenic	ND		0.0050	0.00075	mg/L		07/13/18 14:00	07/17/18 15:03	1
Barium	0.0087		0.0050	0.0022	mg/L		07/13/18 14:00	07/17/18 15:03	1
Beryllium	ND		0.0010	0.00031	mg/L		07/13/18 14:00	07/17/18 15:03	1
Cadmium	0.00024	J B	0.0010	0.00021	mg/L		07/13/18 14:00	07/17/18 15:03	1
Cobalt	0.0062		0.0010	0.00019	mg/L		07/13/18 14:00	07/17/18 15:03	1
Chromium	ND		0.0020	0.00098	mg/L		07/13/18 14:00	07/17/18 15:03	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		07/13/18 14:00	07/17/18 15:03	1
Lead	ND		0.0010	0.00045	mg/L		07/13/18 14:00	07/17/18 15:03	1
Selenium	0.0011	J	0.0050	0.00089	mg/L		07/13/18 14:00	07/17/18 15:03	1
Thallium	ND		0.0010	0.00020	mg/L		07/13/18 14:00	07/17/18 15:03	1
Lithium	0.91		0.0080	0.0017	mg/L		07/13/18 14:00	07/17/18 15:03	1
Calcium	78		1.0	0.58	mg/L		07/13/18 14:00	07/17/18 15:03	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

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

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/13/18 14:00	07/17/18 15:07	1
Arsenic	ND		0.0050	0.00075	mg/L		07/13/18 14:00	07/17/18 15:07	1
Barium	0.0055		0.0050	0.0022	mg/L		07/13/18 14:00	07/17/18 15:07	1
Beryllium	ND		0.0010	0.00031	mg/L		07/13/18 14:00	07/17/18 15:07	1
Cadmium	ND		0.0010	0.00021	mg/L		07/13/18 14:00	07/17/18 15:07	1
Cobalt	0.0012		0.0010	0.00019	mg/L		07/13/18 14:00	07/17/18 15:07	1
Chromium	ND		0.0020	0.00098	mg/L		07/13/18 14:00	07/17/18 15:07	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		07/13/18 14:00	07/17/18 15:07	1
Lead	ND		0.0010	0.00045	mg/L		07/13/18 14:00	07/17/18 15:07	1
Selenium	0.0030	J	0.0050	0.00089	mg/L		07/13/18 14:00	07/17/18 15:07	1
Thallium	ND		0.0010	0.00020	mg/L		07/13/18 14:00	07/17/18 15:07	1
Lithium	0.77		0.0080	0.0017	mg/L		07/13/18 14:00	07/17/18 15:07	1
Calcium	190		1.0	0.58	mg/L		07/13/18 14:00	07/17/18 15:07	1

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/13/18 14:00	07/17/18 15:12	1
Arsenic	ND		0.0050	0.00075	mg/L		07/13/18 14:00	07/17/18 15:12	1
Barium	ND		0.0050	0.0022	mg/L		07/13/18 14:00	07/17/18 15:12	1
Beryllium	ND		0.0010	0.00031	mg/L		07/13/18 14:00	07/17/18 15:12	1
Cadmium	ND		0.0010	0.00021	mg/L		07/13/18 14:00	07/17/18 15:12	1
Cobalt	ND		0.0010	0.00019	mg/L		07/13/18 14:00	07/17/18 15:12	1
Chromium	ND		0.0020	0.00098	mg/L		07/13/18 14:00	07/17/18 15:12	1
Molybdenum	ND		0.010	0.0011	mg/L		07/13/18 14:00	07/17/18 15:12	1
Lead	ND		0.0010	0.00045	mg/L		07/13/18 14:00	07/17/18 15:12	1
Selenium	ND		0.0050	0.00089	mg/L		07/13/18 14:00	07/17/18 15:12	1
Thallium	ND		0.0010	0.00020	mg/L		07/13/18 14:00	07/17/18 15:12	1
Lithium	0.0017	J	0.0080	0.0017	mg/L		07/13/18 14:00	07/17/18 15:12	1
Calcium	ND		1.0	0.58	mg/L		07/13/18 14:00	07/17/18 15:12	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		07/13/18 14:00	07/16/18 17:02	1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		07/13/18 14:00	07/16/18 17:04	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/13/18 14:00	07/16/18 17:06	1

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/13/18 14:00	07/16/18 17:08	1

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/13/18 14:00	07/16/18 17:10	1

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	07/13/18 14:00	07/16/18 17:12	1

General Chemistry

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
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	-		07/14/18 10:20	1
Temperature	19.2	HF	1.0	1.0	Degrees C			07/14/18 10:20	1
Chloride	42	B	6.0	0.51	mg/L			07/23/18 23:23	2
Fluoride	0.36	J	1.0	0.12	mg/L			07/23/18 23:23	2
Sulfate	2700	B	100	4.6	mg/L			07/23/18 23:40	20
Total Dissolved Solids (TDS)	4500		40	19	mg/L			07/11/18 10:37	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			07/12/18 14:06	1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
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	-		07/14/18 10:24	1
Temperature	19.5	HF	1.0	1.0	Degrees C			07/14/18 10:24	1
Chloride	83	B	6.0	0.51	mg/L			07/23/18 23:58	2
Fluoride	0.56	J	1.0	0.12	mg/L			07/23/18 23:58	2
Sulfate	4400	B	250	12	mg/L			07/24/18 00:15	50
Total Dissolved Solids (TDS)	6900		100	47	mg/L			07/11/18 10:52	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			07/12/18 14:06	1

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	-		07/14/18 10:28	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

General Chemistry (Continued)

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	19.4	HF	1.0	1.0	Degrees C			07/14/18 10:28	1
Chloride	190	B	15	1.3	mg/L			07/24/18 00:33	5
Fluoride	0.81	J	2.5	0.30	mg/L			07/24/18 00:33	5
Sulfate	7800	B	500	23	mg/L			07/24/18 00:50	100
Total Dissolved Solids (TDS)	12000		100	47	mg/L			07/11/18 10:52	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			07/12/18 14:06	1

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.3	HF	0.1	0.1	SU			07/14/18 10:32	1
Temperature	19.2	HF	1.0	1.0	Degrees C			07/14/18 10:32	1
Chloride	380	B	15	1.3	mg/L			07/24/18 01:08	5
Fluoride	0.88	J	2.5	0.30	mg/L			07/24/18 01:08	5
Sulfate	13000	B	1000	46	mg/L			07/24/18 01:25	200
Total Dissolved Solids (TDS)	20000		200	94	mg/L			07/11/18 10:52	1
Total Suspended Solids	5.6		4.0	1.1	mg/L			07/12/18 14:06	1

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
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			07/14/18 10:36	1
Temperature	19.0	HF	1.0	1.0	Degrees C			07/14/18 10:36	1
Chloride	82	B	6.0	0.51	mg/L			07/24/18 02:35	2
Fluoride	0.55	J	1.0	0.12	mg/L			07/24/18 02:35	2
Sulfate	4500	B	250	12	mg/L			07/24/18 02:53	50
Total Dissolved Solids (TDS)	7100		100	47	mg/L			07/11/18 10:52	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			07/12/18 14:06	1

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.4	HF	0.1	0.1	SU			07/18/18 14:01	1
Temperature	20.2	HF	1.0	1.0	Degrees C			07/18/18 14:01	1
Chloride	0.46	J B	3.0	0.25	mg/L			07/24/18 01:43	1
Fluoride	ND		0.50	0.060	mg/L			07/24/18 01:43	1
Sulfate	0.56	J B	5.0	0.23	mg/L			07/24/18 01:43	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			07/11/18 10:52	1
Total Suspended Solids	ND		4.0	1.1	mg/L			07/12/18 14:06	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.358		0.128	0.132	1.00	0.127	pCi/L	07/13/18 13:31	08/08/18 05:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110					07/13/18 13:31	08/08/18 05:28	1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.468		0.135	0.141	1.00	0.106	pCi/L	07/13/18 13:31	08/08/18 05:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/13/18 13:31	08/08/18 05:28	1

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.173		0.0984	0.0996	1.00	0.129	pCi/L	07/13/18 13:31	08/08/18 05:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	110		40 - 110					07/13/18 13:31	08/08/18 05:28	1

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.285		0.111	0.114	1.00	0.108	pCi/L	07/13/18 13:31	08/08/18 05:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					07/13/18 13:31	08/08/18 05:28	1

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.256		0.109	0.112	1.00	0.120	pCi/L	07/13/18 13:31	08/08/18 05:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					07/13/18 13:31	08/08/18 05:28	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.156		0.0883	0.0894	1.00	0.107	pCi/L	07/13/18 13:31	08/08/18 05:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/13/18 13:31	08/08/18 05:28	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.561		0.339	0.343	1.00	0.514	pCi/L	07/13/18 14:09	07/27/18 09:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110					07/13/18 14:09	07/27/18 09:19	1
Y Carrier	83.7		40 - 110					07/13/18 14:09	07/27/18 09:19	1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.674		0.354	0.359	1.00	0.528	pCi/L	07/13/18 14:09	07/27/18 09:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/13/18 14:09	07/27/18 09:19	1
Y Carrier	83.7		40 - 110					07/13/18 14:09	07/27/18 09:19	1

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.703		0.317	0.324	1.00	0.456	pCi/L	07/13/18 14:09	07/27/18 09:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	110		40 - 110					07/13/18 14:09	07/27/18 09:19	1
Y Carrier	86.4		40 - 110					07/13/18 14:09	07/27/18 09:19	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.07		0.381	0.393	1.00	0.512	pCi/L	07/13/18 14:09	07/27/18 09:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					07/13/18 14:09	07/27/18 09:19	1
Y Carrier	79.6		40 - 110					07/13/18 14:09	07/27/18 09:19	1

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.703		0.355	0.361	1.00	0.521	pCi/L	07/13/18 14:09	07/27/18 09:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					07/13/18 14:09	07/27/18 09:19	1
Y Carrier	78.5		40 - 110					07/13/18 14:09	07/27/18 09:19	1

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.286	U	0.343	0.344	1.00	0.567	pCi/L	07/13/18 14:09	07/27/18 09:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/13/18 14:09	07/27/18 09:19	1
Y Carrier	77.8		40 - 110					07/13/18 14:09	07/27/18 09:19	1

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

Client Sample ID: W-1
Date Collected: 07/10/18 16:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.919		0.362	0.368	5.00	0.514	pCi/L		08/16/18 13:48	1

Client Sample ID: W-2
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.14		0.379	0.386	5.00	0.528	pCi/L		08/16/18 13:48	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-111779-1

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

Client Sample ID: W-3
Date Collected: 07/10/18 12:25
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.876		0.332	0.339	5.00	0.456	pCi/L		08/16/18 13:48	1

Client Sample ID: W-4
Date Collected: 07/10/18 15:00
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.36		0.397	0.409	5.00	0.512	pCi/L		08/16/18 13:48	1

Client Sample ID: W-2D
Date Collected: 07/10/18 13:40
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.959		0.371	0.378	5.00	0.521	pCi/L		08/16/18 13:48	1

Client Sample ID: W-3EB
Date Collected: 07/10/18 12:45
Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.442	U	0.354	0.355	5.00	0.567	pCi/L		08/16/18 13:48	1

QC Sample Results

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

TestAmerica Job ID: 280-111779-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-340327/1-A
Matrix: Water
Analysis Batch: 340617

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 340327

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/10/18 14:00	08/13/18 11:03	1

Lab Sample ID: LCS 240-340327/2-A
Matrix: Water
Analysis Batch: 340617

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 340327

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.00	1.08		mg/L		108	80 - 120

Lab Sample ID: 280-111779-3 MS
Matrix: Water
Analysis Batch: 340617

Client Sample ID: W-3
Prep Type: Total Recoverable
Prep Batch: 340327

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	0.89		1.00	1.95		mg/L		106	75 - 125

Lab Sample ID: 280-111779-3 MSD
Matrix: Water
Analysis Batch: 340617

Client Sample ID: W-3
Prep Type: Total Recoverable
Prep Batch: 340327

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	0.89		1.00	1.86		mg/L		97	75 - 125	5	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-336095/1-A
Matrix: Water
Analysis Batch: 337019

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 336095

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		07/13/18 14:00	07/18/18 14:26	1
Arsenic	ND		0.0050	0.00075	mg/L		07/13/18 14:00	07/18/18 14:26	1
Barium	ND		0.0050	0.0022	mg/L		07/13/18 14:00	07/18/18 14:26	1
Beryllium	0.000769	J	0.0010	0.00031	mg/L		07/13/18 14:00	07/18/18 14:26	1
Cadmium	0.000220	J	0.0010	0.00021	mg/L		07/13/18 14:00	07/18/18 14:26	1
Cobalt	ND		0.0010	0.00019	mg/L		07/13/18 14:00	07/18/18 14:26	1
Chromium	ND		0.0020	0.00098	mg/L		07/13/18 14:00	07/18/18 14:26	1
Molybdenum	ND		0.010	0.0011	mg/L		07/13/18 14:00	07/18/18 14:26	1
Lead	ND		0.0010	0.00045	mg/L		07/13/18 14:00	07/18/18 14:26	1
Selenium	ND		0.0050	0.00089	mg/L		07/13/18 14:00	07/18/18 14:26	1
Thallium	ND		0.0010	0.00020	mg/L		07/13/18 14:00	07/18/18 14:26	1
Lithium	ND		0.0080	0.0017	mg/L		07/13/18 14:00	07/18/18 14:26	1
Calcium	ND		1.0	0.58	mg/L		07/13/18 14:00	07/18/18 14:26	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-111779-1

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

Lab Sample ID: LCS 240-336095/2-A

Matrix: Water

Analysis Batch: 336877

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 336095

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0913		mg/L		91	80 - 120
Arsenic	1.00	1.00		mg/L		100	80 - 120
Barium	1.00	1.08		mg/L		108	80 - 120
Beryllium	1.00	0.982		mg/L		98	80 - 120
Cadmium	1.00	1.07		mg/L		107	80 - 120
Cobalt	1.00	1.09		mg/L		109	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Molybdenum	0.100	0.0939		mg/L		94	80 - 120
Lead	1.00	0.967		mg/L		97	80 - 120
Selenium	1.00	1.02		mg/L		102	80 - 120
Thallium	0.250	0.243		mg/L		97	80 - 120
Lithium	0.100	0.0974		mg/L		97	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-336096/1-A

Matrix: Water

Analysis Batch: 336579

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 336096

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		07/13/18 14:00	07/16/18 16:34	1

Lab Sample ID: LCS 240-336096/2-A

Matrix: Water

Analysis Batch: 336579

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 336096

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.14		ug/L		103	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-422533/4

Matrix: Water

Analysis Batch: 422533

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 280-422755/4

Matrix: Water

Analysis Batch: 422755

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-111779-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-423188/6

Matrix: Water

Analysis Batch: 423188

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.461	J	3.0	0.25	mg/L			07/23/18 15:06	1
Fluoride	ND		0.50	0.060	mg/L			07/23/18 15:06	1
Sulfate	0.532	J	5.0	0.23	mg/L			07/23/18 15:06	1

Lab Sample ID: LCS 280-423188/4

Matrix: Water

Analysis Batch: 423188

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	5.08		mg/L		102	90 - 110
Sulfate	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-423188/5

Matrix: Water

Analysis Batch: 423188

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	5.00		mg/L		100	90 - 110	2	10
Sulfate	100	100		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-423188/3

Matrix: Water

Analysis Batch: 423188

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	2.29	J	mg/L		91	50 - 150
Fluoride	0.200	0.236	J	mg/L		118	50 - 150
Sulfate	2.50	2.44	J	mg/L		98	50 - 150

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

Lab Sample ID: MB 280-421798/1

Matrix: Water

Analysis Batch: 421798

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			07/11/18 10:37	1

Lab Sample ID: LCS 280-421798/2

Matrix: Water

Analysis Batch: 421798

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-111779-1

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

Lab Sample ID: MB 280-422019/1
Matrix: Water
Analysis Batch: 422019

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			07/12/18 14:06	1

Lab Sample ID: LCS 280-422019/2
Matrix: Water
Analysis Batch: 422019

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.4		mg/L		92	86 - 114

Lab Sample ID: LCSD 280-422019/3
Matrix: Water
Analysis Batch: 422019

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	108		mg/L		108	86 - 114	16	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-375564/15-A
Matrix: Water
Analysis Batch: 380986

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 375564

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1295		0.0706	0.0716	1.00	0.0869	pCi/L	07/13/18 13:31	08/08/18 05:29	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	07/13/18 13:31	08/08/18 05:29	1

Lab Sample ID: LCS 160-375564/1-A
Matrix: Water
Analysis Batch: 380986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 375564

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.46		1.09	1.00	0.0719	pCi/L	92	68 - 137

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	92.0		40 - 110

Lab Sample ID: LCSD 160-375564/2-A
Matrix: Water
Analysis Batch: 380986

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 375564

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	10.60		1.10	1.00	0.101	pCi/L	93	68 - 137	0.07	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-111779-1

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

Lab Sample ID: LCSD 160-375564/2-A
Matrix: Water
Analysis Batch: 380986

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 375564

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	99.7		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-375578/15-A
Matrix: Water
Analysis Batch: 378362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 375578

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3845	U	0.274	0.276	1.00	0.430	pCi/L	07/13/18 14:09	07/27/18 09:20	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/13/18 14:09	07/27/18 09:20	1
Y Carrier	83.4		40 - 110					07/13/18 14:09	07/27/18 09:20	1

Lab Sample ID: LCS 160-375578/1-A
Matrix: Water
Analysis Batch: 378362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 375578

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	11.2	11.46		1.31	1.00	0.513	pCi/L	102	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	92.0		40 - 110						
Y Carrier	84.9		40 - 110						

Lab Sample ID: LCSD 160-375578/2-A
Matrix: Water
Analysis Batch: 378362

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 375578

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	11.2	10.96		1.25	1.00	0.404	pCi/L	98	56 - 140	0.19	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits								
Ba Carrier	99.7		40 - 110								
Y Carrier	81.1		40 - 110								

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-111779-1

Metals

Prep Batch: 336095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total Recoverable	Water	3005A	
280-111779-2	W-2	Total Recoverable	Water	3005A	
280-111779-3	W-3	Total Recoverable	Water	3005A	
280-111779-4	W-4	Total Recoverable	Water	3005A	
280-111779-5	W-2D	Total Recoverable	Water	3005A	
280-111779-6	W-3EB	Total Recoverable	Water	3005A	
MB 240-336095/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-336095/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 336096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	7470A	
280-111779-2	W-2	Total/NA	Water	7470A	
280-111779-3	W-3	Total/NA	Water	7470A	
280-111779-4	W-4	Total/NA	Water	7470A	
280-111779-5	W-2D	Total/NA	Water	7470A	
280-111779-6	W-3EB	Total/NA	Water	7470A	
MB 240-336096/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-336096/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 336579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	7470A	336096
280-111779-2	W-2	Total/NA	Water	7470A	336096
280-111779-3	W-3	Total/NA	Water	7470A	336096
280-111779-4	W-4	Total/NA	Water	7470A	336096
280-111779-5	W-2D	Total/NA	Water	7470A	336096
280-111779-6	W-3EB	Total/NA	Water	7470A	336096
MB 240-336096/1-A	Method Blank	Total/NA	Water	7470A	336096
LCS 240-336096/2-A	Lab Control Sample	Total/NA	Water	7470A	336096

Analysis Batch: 336877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total Recoverable	Water	6020A	336095
280-111779-2	W-2	Total Recoverable	Water	6020A	336095
280-111779-3	W-3	Total Recoverable	Water	6020A	336095
280-111779-4	W-4	Total Recoverable	Water	6020A	336095
280-111779-5	W-2D	Total Recoverable	Water	6020A	336095
280-111779-6	W-3EB	Total Recoverable	Water	6020A	336095
LCS 240-336095/2-A	Lab Control Sample	Total Recoverable	Water	6020A	336095

Analysis Batch: 337019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-336095/1-A	Method Blank	Total Recoverable	Water	6020A	336095

Prep Batch: 340327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total Recoverable	Water	3005A	
280-111779-2	W-2	Total Recoverable	Water	3005A	
280-111779-3	W-3	Total Recoverable	Water	3005A	
280-111779-4	W-4	Total Recoverable	Water	3005A	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-111779-1

Metals (Continued)

Prep Batch: 340327 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-5	W-2D	Total Recoverable	Water	3005A	
280-111779-6	W-3EB	Total Recoverable	Water	3005A	
MB 240-340327/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-340327/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-111779-3 MS	W-3	Total Recoverable	Water	3005A	
280-111779-3 MSD	W-3	Total Recoverable	Water	3005A	

Analysis Batch: 340617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total Recoverable	Water	6010C	340327
280-111779-2	W-2	Total Recoverable	Water	6010C	340327
280-111779-3	W-3	Total Recoverable	Water	6010C	340327
280-111779-4	W-4	Total Recoverable	Water	6010C	340327
280-111779-5	W-2D	Total Recoverable	Water	6010C	340327
280-111779-6	W-3EB	Total Recoverable	Water	6010C	340327
MB 240-340327/1-A	Method Blank	Total Recoverable	Water	6010C	340327
LCS 240-340327/2-A	Lab Control Sample	Total Recoverable	Water	6010C	340327
280-111779-3 MS	W-3	Total Recoverable	Water	6010C	340327
280-111779-3 MSD	W-3	Total Recoverable	Water	6010C	340327

General Chemistry

Analysis Batch: 421798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	SM 2540C	
280-111779-2	W-2	Total/NA	Water	SM 2540C	
280-111779-3	W-3	Total/NA	Water	SM 2540C	
280-111779-4	W-4	Total/NA	Water	SM 2540C	
280-111779-5	W-2D	Total/NA	Water	SM 2540C	
280-111779-6	W-3EB	Total/NA	Water	SM 2540C	
MB 280-421798/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-421798/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 422019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	SM 2540D	
280-111779-2	W-2	Total/NA	Water	SM 2540D	
280-111779-3	W-3	Total/NA	Water	SM 2540D	
280-111779-4	W-4	Total/NA	Water	SM 2540D	
280-111779-5	W-2D	Total/NA	Water	SM 2540D	
280-111779-6	W-3EB	Total/NA	Water	SM 2540D	
MB 280-422019/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-422019/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-422019/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 422533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	9040B	
280-111779-2	W-2	Total/NA	Water	9040B	
280-111779-3	W-3	Total/NA	Water	9040B	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-111779-1

General Chemistry (Continued)

Analysis Batch: 422533 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-4	W-4	Total/NA	Water	9040B	
280-111779-5	W-2D	Total/NA	Water	9040B	
LCS 280-422533/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 422755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-6	W-3EB	Total/NA	Water	9040B	
LCS 280-422755/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 423188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	9056A	
280-111779-1	W-1	Total/NA	Water	9056A	
280-111779-2	W-2	Total/NA	Water	9056A	
280-111779-2	W-2	Total/NA	Water	9056A	
280-111779-3	W-3	Total/NA	Water	9056A	
280-111779-3	W-3	Total/NA	Water	9056A	
280-111779-4	W-4	Total/NA	Water	9056A	
280-111779-4	W-4	Total/NA	Water	9056A	
280-111779-5	W-2D	Total/NA	Water	9056A	
280-111779-5	W-2D	Total/NA	Water	9056A	
280-111779-6	W-3EB	Total/NA	Water	9056A	
MB 280-423188/6	Method Blank	Total/NA	Water	9056A	
LCS 280-423188/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-423188/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-423188/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 375564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	PrecSep-21	
280-111779-2	W-2	Total/NA	Water	PrecSep-21	
280-111779-3	W-3	Total/NA	Water	PrecSep-21	
280-111779-4	W-4	Total/NA	Water	PrecSep-21	
280-111779-5	W-2D	Total/NA	Water	PrecSep-21	
280-111779-6	W-3EB	Total/NA	Water	PrecSep-21	
MB 160-375564/15-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-375564/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-375564/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 375578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111779-1	W-1	Total/NA	Water	PrecSep_0	
280-111779-2	W-2	Total/NA	Water	PrecSep_0	
280-111779-3	W-3	Total/NA	Water	PrecSep_0	
280-111779-4	W-4	Total/NA	Water	PrecSep_0	
280-111779-5	W-2D	Total/NA	Water	PrecSep_0	
280-111779-6	W-3EB	Total/NA	Water	PrecSep_0	
MB 160-375578/15-A	Method Blank	Total/NA	Water	PrecSep_0	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-111779-1

Rad (Continued)

Prep Batch: 375578 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 160-375578/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-375578/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-1

Date Collected: 07/10/18 16:00

Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-1

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	340327	08/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/13/18 11:44	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	336095	07/13/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			336877	07/17/18 14:49	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	336096	07/13/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			336579	07/16/18 17:02	AJC	TAL CAN
Total/NA	Analysis	9040B		1			422533	07/14/18 10:20	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	423188	07/23/18 23:23	CCJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	423188	07/23/18 23:40	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	421798	07/11/18 10:37	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	422019	07/12/18 14:06	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.34 mL	1.0 g	375564	07/13/18 13:31	JLC	TAL SL
Total/NA	Analysis	9315		1			380986	08/08/18 05:28	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.34 mL	1.0 g	375578	07/13/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1			378362	07/27/18 09:19	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			382942	08/16/18 13:48	RTM	TAL SL

Client Sample ID: W-2

Date Collected: 07/10/18 13:40

Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-2

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	340327	08/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/13/18 11:49	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	336095	07/13/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			336877	07/17/18 14:54	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	336096	07/13/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			336579	07/16/18 17:04	AJC	TAL CAN
Total/NA	Analysis	9040B		1			422533	07/14/18 10:24	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	423188	07/23/18 23:58	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	423188	07/24/18 00:15	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	421798	07/11/18 10:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	422019	07/12/18 14:06	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.38 mL	1.0 g	375564	07/13/18 13:31	JLC	TAL SL
Total/NA	Analysis	9315		1			380986	08/08/18 05:28	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.38 mL	1.0 g	375578	07/13/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1			378362	07/27/18 09:19	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			382942	08/16/18 13:48	RTM	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-3

Date Collected: 07/10/18 12:25

Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-3

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	340327	08/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/13/18 11:12	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	336095	07/13/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			336877	07/17/18 14:58	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	336096	07/13/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			336579	07/16/18 17:06	AJC	TAL CAN
Total/NA	Analysis	9040B		1			422533	07/14/18 10:28	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	423188	07/24/18 00:33	CCJ	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	423188	07/24/18 00:50	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	421798	07/11/18 10:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	422019	07/12/18 14:06	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			749.95 mL	1.0 g	375564	07/13/18 13:31	JLC	TAL SL
Total/NA	Analysis	9315		1			380986	08/08/18 05:28	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.95 mL	1.0 g	375578	07/13/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1			378362	07/27/18 09:19	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			382942	08/16/18 13:48	RTM	TAL SL

Client Sample ID: W-4

Date Collected: 07/10/18 15:00

Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-4

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	340327	08/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/13/18 11:54	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	336095	07/13/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			336877	07/17/18 15:03	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	336096	07/13/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			336579	07/16/18 17:08	AJC	TAL CAN
Total/NA	Analysis	9040B		1			422533	07/14/18 10:32	LPL	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	423188	07/24/18 01:08	CCJ	TAL DEN
Total/NA	Analysis	9056A		200	5 mL	5 mL	423188	07/24/18 01:25	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	421798	07/11/18 10:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	422019	07/12/18 14:06	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.31 mL	1.0 g	375564	07/13/18 13:31	JLC	TAL SL
Total/NA	Analysis	9315		1			380986	08/08/18 05:28	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.31 mL	1.0 g	375578	07/13/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1			378362	07/27/18 09:19	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			382942	08/16/18 13:48	RTM	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-111779-1

Client Sample ID: W-2D

Date Collected: 07/10/18 13:40

Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-5

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	340327	08/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/13/18 11:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	336095	07/13/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			336877	07/17/18 15:07	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	336096	07/13/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			336579	07/16/18 17:10	AJC	TAL CAN
Total/NA	Analysis	9040B		1			422533	07/14/18 10:36	LPL	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	423188	07/24/18 02:35	CCJ	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	423188	07/24/18 02:53	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	421798	07/11/18 10:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	422019	07/12/18 14:06	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			749.89 mL	1.0 g	375564	07/13/18 13:31	JLC	TAL SL
Total/NA	Analysis	9315		1			380986	08/08/18 05:28	RTM	TAL SL
Total/NA	Prep	PrecSep_0			749.89 mL	1.0 g	375578	07/13/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1			378362	07/27/18 09:19	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			382942	08/16/18 13:48	RTM	TAL SL

Client Sample ID: W-3EB

Date Collected: 07/10/18 12:45

Date Received: 07/11/18 08:41

Lab Sample ID: 280-111779-6

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	340327	08/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			340617	08/13/18 12:04	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	336095	07/13/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			336877	07/17/18 15:12	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	336096	07/13/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			336579	07/16/18 17:12	AJC	TAL CAN
Total/NA	Analysis	9040B		1			422755	07/18/18 14:01	LPL	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	423188	07/24/18 01:43	CCJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	421798	07/11/18 10:52	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	422019	07/12/18 14:06	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.19 mL	1.0 g	375564	07/13/18 13:31	JLC	TAL SL
Total/NA	Analysis	9315		1			380986	08/08/18 05:28	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.19 mL	1.0 g	375578	07/13/18 14:09	JLC	TAL SL
Total/NA	Analysis	9320		1			378362	07/27/18 09:19	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			382942	08/16/18 13:48	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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-111779-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-18 *
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-18 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-111779-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18 *
West Virginia DEP	State Program	3	381	08-31-18 *

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

TestAmerica Denver

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THE LEADER IN ENVIRONMENTAL TESTING

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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:		Center Tracking Note:		COC No:	
Client Contact:		Phone:		E-Mail:		State of Origin:		Page:	
Shipping/Receiving:				stephanie.rothmeyer@testamericainc.com		Colorado		Page 1 of 1	
Company:				Accreditations Required (See notes):				Job #:	
TestAmerica Laboratories, Inc.				DoD ELAP - A2LA				280-111779-1	
Address:		Due Date Requested:		Analysis Requested					
13715 Rider Trail North,		8/6/2018							
City:		TAT Requested (days):		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - H2SO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - FDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - USP Dodecylhydrate U - Acetone V - MCAA W - pH 4.5 Z - other (specify) Other:					
Earth City									
State, Zip:		PO #:		9115_Ra226/PrecSep_21_Radium-226 (1/3 for Ra-226/Ra-228) SUB 9120_Ra226/PrecSep_0_Radium-226 (2/3 for Ra-226/Ra-228) SUB Total Number of Containers					
MO: 63045									
Phone:		WO #:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 9115_Ra226/PrecSep_21_Radium-226 (1/3 for Ra-226/Ra-228) SUB 9120_Ra226/PrecSep_0_Radium-226 (2/3 for Ra-226/Ra-228) SUB					
314-236-8566(Tel) 314-298-8757(Fax)									
Email:		Project #:		Sample Identification - Client ID (Lab ID) Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, U=unknown, A=air) Preservation Code Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 9115_Ra226/PrecSep_21_Radium-226 (1/3 for Ra-226/Ra-228) SUB 9120_Ra226/PrecSep_0_Radium-226 (2/3 for Ra-226/Ra-228) SUB Total Number of Containers Special Instructions/Note:					
Project Name:		28014377							
Site:		SSOWF:		W-1 (280-111779-1) W-2 (280-111779-2) W-3 (280-111779-3) W-4 (280-111779-4) W-2D (280-111779-5) W-3EB (280-111779-6) 7/10/18 7/10/18 7/10/18 7/10/18 7/10/18 7/10/18 16:00 Mountain 13:40 Mountain 12:25 Mountain 15:00 Mountain 13:40 Mountain 12:45 Mountain Water Water Water Water Water Water X X X X X X X X X X X X 1 1 1 1 1 1					
Xcel Energy CCR - Hayden Station									

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontracted 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/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Method of Shipment:	
Date:		Time:	
Relinquished by: <i>Patricia May</i>		Received by:	
Date/Time: 7-11-18 1415		Date/Time:	
Company: Test America		Company:	
Relinquished by:		Received by:	
Date/Time:		Date/Time:	
Company:		Company:	
Relinquished by:		Received by:	
Date/Time:		Date/Time:	
Company:		Company:	
Custody Seals Intact: ☒ Yes ☐ No		Cooler Temperature(s) °C and Other Remarks:	
Custody Seal No.:			

Ver: 09/20/2016

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TestAmerica

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Ver: 49.21.2016

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login #: _____

Client TIAD Site Name _____ Cooler unpacked by: Gil Brown
 Cooler Received on 7/12/18 Opened on 7/12/18
 FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # _____ 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. 0.6 °C Corrected Cooler Temp. 0.6 °C
 IR GUN #36 (CF -0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #627 (CF -1.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? (Yes) No NA
 -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples?
 If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC740840
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? (Yes) Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

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

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-111779-1

Login Number: 111779

List Number: 1

Creator: Lujan, Jacob P

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	Refer to Job Narrative for details.
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	Refer to Job Narrative for details.
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 $<6\text{mm}$ (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: 280-111779-1

Login Number: 111779

List Number: 2

Creator: Dameron, Bryan K

List Source: TestAmerica St. Louis

List Creation: 07/12/18 02:19 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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.	N/A	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-111779-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-111779-1	W-1	95.6	
280-111779-2	W-2	101	
280-111779-3	W-3	110	
280-111779-4	W-4	102	
280-111779-5	W-2D	104	
280-111779-6	W-3EB	101	
LCS 160-375564/1-A	Lab Control Sample	92.0	
LCSD 160-375564/2-A	Lab Control Sample Dup	99.7	
MB 160-375564/15-A	Method Blank	101	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-111779-1	W-1	95.6	83.7
280-111779-2	W-2	101	83.7
280-111779-3	W-3	110	86.4
280-111779-4	W-4	102	79.6
280-111779-5	W-2D	104	78.5
280-111779-6	W-3EB	101	77.8
LCS 160-375578/1-A	Lab Control Sample	92.0	84.9
LCSD 160-375578/2-A	Lab Control Sample Dup	99.7	81.1
MB 160-375578/15-A	Method Blank	101	83.4
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-113178-1

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

For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:

9/26/2018 2:12:44 PM

Darlene Bandy, Project Manager I

(303)736-0188

darlene.bandy@testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-113178-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
B	Compound was found in the blank and sample.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-113178-1

Job ID: 280-113178-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-113178-1

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 8/14/2018 2:25 PM; the samples arrived in good condition except as noted below, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.1° C and 6.9° C.

Receipt Exceptions

The following login was received at the laboratory partially outside the required temperature criteria: 280-113178, at 3.1C and 6.9C. The client was notified on 8/14/2018.

TOTAL RECOVERABLE METALS

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/20/2018 and analyzed on 08/21/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 08/20/2018 and analyzed on 08/22/2018 and 09/14/2018.

Chromium, Beryllium and Selenium were detected in method blank MB 240-341612/1-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.

The continuing calibration verification (CCV) associated with batch 240-342100 recovered above the upper control limit for Arsenic, Cobalt and Selenium. The samples associated with this CCV were below the requested reporting limit for the affected analyte; therefore, the data have been reported. The following sample is impacted: W-2EB (280-113178-6).

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

TOTAL MERCURY

Case Narrative

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

TestAmerica Job ID: 280-113178-1

Job ID: 280-113178-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 08/20/2018 and analyzed on 08/21/2018.

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

TOTAL DISSOLVED SOLIDS

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/15/2018.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/15/2018.

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

CORROSIVITY (PH)

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 08/15/2018.

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

ANIONS (28 DAYS)

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 08/22/2018 and 08/23/2018.

Fluoride was detected in method blank MB 280-426934/6 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 W-1 (280-113178-1)[2X], W-1 (280-113178-1)[20X], W-2 (280-113178-2)[5X], W-2 (280-113178-2)[50X], W-3 (280-113178-3)[5X], W-3 (280-113178-3)[50X], W-4 (280-113178-4)[100X], W-4 (280-113178-4)[5X], W-1D (280-113178-5)[5X] and W-1D (280-113178-5)[50X] required dilution prior to analysis due to analyte concentration and/or the Matrix Conductivity Threshold (MCT) of the instrument. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 08/17/2018 and analyzed on 09/10/2018.

Sample aliquots were reduced due to limited sample volume: W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6)

Radium-226 was detected in method blank MB 160-383016/23-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

Case Narrative

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

TestAmerica Job ID: 280-113178-1

Job ID: 280-113178-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

RADIUM-228

Samples W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 08/17/2018 and analyzed on 08/23/2018.

Sample aliquots were reduced due to limited sample volume: W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6)

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 W-1 (280-113178-1), W-2 (280-113178-2), W-3 (280-113178-3), W-4 (280-113178-4), W-1D (280-113178-5) and W-2EB (280-113178-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 09/11/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-1

Lab Sample ID: 280-113178-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.64		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0096		0.0050	0.0022	mg/L	1		6020A	Recoverable
Beryllium	0.00035	J B	0.0010	0.00031	mg/L	1		6020A	Total
Cobalt	0.0012		0.0010	0.00019	mg/L	1		6020A	Recoverable
Chromium	0.0017	J B	0.0020	0.00098	mg/L	1		6020A	Total
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Recoverable
Selenium	0.013	B	0.0050	0.00089	mg/L	1		6020A	Total
Lithium	0.32		0.0080	0.0017	mg/L	1		6020A	Recoverable
Calcium	330		1.0	0.58	mg/L	1		6020A	Total
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Recoverable
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	36		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.22	J B	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	2600		100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-113178-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.7		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0055		0.0050	0.0022	mg/L	1		6020A	Recoverable
Cobalt	0.0016		0.0010	0.00019	mg/L	1		6020A	Total
Chromium	0.0015	J B	0.0020	0.00098	mg/L	1		6020A	Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total
Selenium	0.0036	J B	0.0050	0.00089	mg/L	1		6020A	Recoverable
Lithium	0.76		0.0080	0.0017	mg/L	1		6020A	Total
Calcium	360		1.0	0.58	mg/L	1		6020A	Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total
Temperature	19.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	64		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.53	J B	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	4100		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7200		100	47	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: W-3

Lab Sample ID: 280-113178-3

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-3 (Continued)

Lab Sample ID: 280-113178-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.89		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0067		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00041	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0020		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0013	J B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.014	B	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	1.8		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	240		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	160		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.36	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	7700		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	13000		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-113178-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0090		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00032	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0071		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Chromium	0.0019	J B	0.0020	0.00098	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0021	J B	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.99		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	370		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	340		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.56	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	14000		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	21000		200	94	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-1D

Lab Sample ID: 280-113178-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.59		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0089		0.0050	0.0022	mg/L	1			6020A	Recoverable
Cadmium	0.00021	J	0.0010	0.00021	mg/L	1			6020A	Total
Cobalt	0.0011		0.0010	0.00019	mg/L	1			6020A	Recoverable
Chromium	0.0018	J B	0.0020	0.00098	mg/L	1			6020A	Total
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1			6020A	Recoverable
Selenium	0.013	B	0.0050	0.00089	mg/L	1			6020A	Total
Lithium	0.32		0.0080	0.0017	mg/L	1			6020A	Recoverable
Calcium	330		1.0	0.58	mg/L	1			6020A	Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	19.6	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	45		15	1.3	mg/L	5			9056A	Total/NA
Sulfate	4300		250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-2EB

Lab Sample ID: 280-113178-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chromium	0.0017	J B	0.0020	0.00098	mg/L	1			6020A	Total
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU	1			9040B	Recoverable
Temperature	19.5	HF	1.0	1.0	Degrees C	1			9040B	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.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-113178-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-113178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113178-1	W-1	Water	08/13/18 14:20	08/14/18 14:21
280-113178-2	W-2	Water	08/13/18 16:20	08/14/18 14:21
280-113178-3	W-3	Water	08/13/18 17:35	08/14/18 14:21
280-113178-4	W-4	Water	08/13/18 15:30	08/14/18 14:21
280-113178-5	W-1D	Water	08/13/18 14:20	08/14/18 14:21
280-113178-6	W-2EB	Water	08/13/18 16:35	08/14/18 14:21

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

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

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.64		0.10	0.023	mg/L	-	08/20/18 14:00	08/21/18 18:31	1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.7		0.10	0.023	mg/L	-	08/20/18 14:00	08/21/18 18:36	1

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.89		0.10	0.023	mg/L	-	08/20/18 14:00	08/21/18 18:41	1

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L	-	08/20/18 14:00	08/21/18 18:46	1

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.59		0.10	0.023	mg/L	-	08/20/18 14:00	08/21/18 18:50	1

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L	-	08/20/18 14:00	08/21/18 18:55	1

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

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Arsenic	ND		0.0050	0.00075	mg/L	-	08/20/18 14:00	09/14/18 16:04	1
Barium	0.0096		0.0050	0.0022	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Beryllium	0.00035	J B	0.0010	0.00031	mg/L	-	08/20/18 14:00	09/14/18 16:04	1
Cadmium	ND		0.0010	0.00021	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Cobalt	0.0012		0.0010	0.00019	mg/L	-	08/20/18 14:00	09/14/18 16:04	1
Chromium	0.0017	J B	0.0020	0.00098	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Lead	ND		0.0010	0.00045	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Selenium	0.013	B	0.0050	0.00089	mg/L	-	08/20/18 14:00	09/14/18 16:04	1
Thallium	ND		0.0010	0.00020	mg/L	-	08/20/18 14:00	08/22/18 20:58	1
Lithium	0.32		0.0080	0.0017	mg/L	-	08/20/18 14:00	09/14/18 16:04	1
Calcium	330		1.0	0.58	mg/L	-	08/20/18 14:00	08/22/18 20:58	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/22/18 21:02	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	09/14/18 16:09	1
Barium	0.0055		0.0050	0.0022	mg/L		08/20/18 14:00	08/22/18 21:02	1
Beryllium	ND		0.0010	0.00031	mg/L		08/20/18 14:00	09/14/18 16:09	1
Cadmium	ND		0.0010	0.00021	mg/L		08/20/18 14:00	08/22/18 21:02	1
Cobalt	0.0016		0.0010	0.00019	mg/L		08/20/18 14:00	09/14/18 16:09	1
Chromium	0.0015	J B	0.0020	0.00098	mg/L		08/20/18 14:00	08/22/18 21:02	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		08/20/18 14:00	08/22/18 21:02	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/22/18 21:02	1
Selenium	0.0036	J B	0.0050	0.00089	mg/L		08/20/18 14:00	09/14/18 16:09	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/22/18 21:02	1
Lithium	0.76		0.0080	0.0017	mg/L		08/20/18 14:00	09/14/18 16:09	1
Calcium	360		1.0	0.58	mg/L		08/20/18 14:00	08/22/18 21:02	1

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/22/18 21:07	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	09/14/18 16:14	1
Barium	0.0067		0.0050	0.0022	mg/L		08/20/18 14:00	08/22/18 21:07	1
Beryllium	ND		0.0010	0.00031	mg/L		08/20/18 14:00	09/14/18 16:14	1
Cadmium	0.00041	J	0.0010	0.00021	mg/L		08/20/18 14:00	08/22/18 21:07	1
Cobalt	0.0020		0.0010	0.00019	mg/L		08/20/18 14:00	09/14/18 16:14	1
Chromium	0.0013	J B	0.0020	0.00098	mg/L		08/20/18 14:00	08/22/18 21:07	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		08/20/18 14:00	08/22/18 21:07	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/22/18 21:07	1
Selenium	0.014	B	0.0050	0.00089	mg/L		08/20/18 14:00	09/14/18 16:14	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/22/18 21:07	1
Lithium	1.8		0.0080	0.0017	mg/L		08/20/18 14:00	09/14/18 16:14	1
Calcium	240		1.0	0.58	mg/L		08/20/18 14:00	08/22/18 21:07	1

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/22/18 21:11	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	09/14/18 16:18	1
Barium	0.0090		0.0050	0.0022	mg/L		08/20/18 14:00	08/22/18 21:11	1
Beryllium	ND		0.0010	0.00031	mg/L		08/20/18 14:00	09/14/18 16:18	1
Cadmium	0.00032	J	0.0010	0.00021	mg/L		08/20/18 14:00	08/22/18 21:11	1
Cobalt	0.0071		0.0010	0.00019	mg/L		08/20/18 14:00	09/14/18 16:18	1
Chromium	0.0019	J B	0.0020	0.00098	mg/L		08/20/18 14:00	08/22/18 21:11	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L		08/20/18 14:00	08/22/18 21:11	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/22/18 21:11	1
Selenium	0.0021	J B	0.0050	0.00089	mg/L		08/20/18 14:00	09/14/18 16:18	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/22/18 21:11	1
Lithium	0.99		0.0080	0.0017	mg/L		08/20/18 14:00	09/14/18 16:18	1
Calcium	370		1.0	0.58	mg/L		08/20/18 14:00	08/22/18 21:11	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

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

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/22/18 21:16	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	09/14/18 16:23	1
Barium	0.0089		0.0050	0.0022	mg/L		08/20/18 14:00	08/22/18 21:16	1
Beryllium	ND		0.0010	0.00031	mg/L		08/20/18 14:00	09/14/18 16:23	1
Cadmium	0.00021	J	0.0010	0.00021	mg/L		08/20/18 14:00	08/22/18 21:16	1
Cobalt	0.0011		0.0010	0.00019	mg/L		08/20/18 14:00	09/14/18 16:23	1
Chromium	0.0018	J B	0.0020	0.00098	mg/L		08/20/18 14:00	08/22/18 21:16	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		08/20/18 14:00	08/22/18 21:16	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/22/18 21:16	1
Selenium	0.013	B	0.0050	0.00089	mg/L		08/20/18 14:00	09/14/18 16:23	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/22/18 21:16	1
Lithium	0.32		0.0080	0.0017	mg/L		08/20/18 14:00	09/14/18 16:23	1
Calcium	330		1.0	0.58	mg/L		08/20/18 14:00	08/22/18 21:16	1

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/22/18 21:20	1
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	09/14/18 16:28	1
Barium	ND		0.0050	0.0022	mg/L		08/20/18 14:00	08/22/18 21:20	1
Beryllium	ND		0.0010	0.00031	mg/L		08/20/18 14:00	09/14/18 16:28	1
Cadmium	ND		0.0010	0.00021	mg/L		08/20/18 14:00	08/22/18 21:20	1
Cobalt	ND		0.0010	0.00019	mg/L		08/20/18 14:00	09/14/18 16:28	1
Chromium	0.0017	J B	0.0020	0.00098	mg/L		08/20/18 14:00	08/22/18 21:20	1
Molybdenum	ND		0.010	0.0011	mg/L		08/20/18 14:00	08/22/18 21:20	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/22/18 21:20	1
Selenium	ND		0.0050	0.00089	mg/L		08/20/18 14:00	09/14/18 16:28	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/22/18 21:20	1
Lithium	ND		0.0080	0.0017	mg/L		08/20/18 14:00	09/14/18 16:28	1
Calcium	ND		1.0	0.58	mg/L		08/20/18 14:00	08/22/18 21:20	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/20/18 14:00	08/21/18 12:30	1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/20/18 14:00	08/21/18 12:32	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	08/20/18 14:00	08/21/18 12:34	1

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	08/20/18 14:00	08/21/18 12:40	1

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	08/20/18 14:00	08/21/18 12:42	1

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	-	08/20/18 14:00	08/21/18 12:44	1

General Chemistry

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
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	-		08/15/18 15:06	1
Temperature	19.7	HF	1.0	1.0	Degrees C	-		08/15/18 15:06	1
Chloride	36		6.0	0.51	mg/L	-		08/22/18 11:46	2
Fluoride	0.22	J B	1.0	0.12	mg/L	-		08/22/18 11:46	2
Sulfate	2600		100	4.6	mg/L	-		08/22/18 12:08	20
Total Dissolved Solids (TDS)	4500		40	19	mg/L	-		08/15/18 16:11	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	-		08/15/18 17:47	1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
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	-		08/15/18 15:10	1
Temperature	19.9	HF	1.0	1.0	Degrees C	-		08/15/18 15:10	1
Chloride	64		15	1.3	mg/L	-		08/22/18 12:31	5
Fluoride	0.53	J B	2.5	0.30	mg/L	-		08/22/18 12:31	5
Sulfate	4100		250	12	mg/L	-		08/22/18 12:53	50
Total Dissolved Solids (TDS)	7200		100	47	mg/L	-		08/15/18 16:11	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	-		08/15/18 17:47	1

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	-		08/15/18 15:14	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

General Chemistry (Continued)

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	19.9	HF	1.0	1.0	Degrees C			08/15/18 15:14	1
Chloride	160		15	1.3	mg/L			08/22/18 14:00	5
Fluoride	0.36	J	2.5	0.30	mg/L			08/23/18 04:17	5
Sulfate	7700		250	12	mg/L			08/22/18 16:30	50
Total Dissolved Solids (TDS)	13000		100	47	mg/L			08/15/18 16:11	1
Total Suspended Solids	4.0		4.0	1.1	mg/L			08/15/18 17:47	1

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			08/15/18 15:19	1
Temperature	19.5	HF	1.0	1.0	Degrees C			08/15/18 15:19	1
Chloride	340		15	1.3	mg/L			08/22/18 16:52	5
Fluoride	0.56	J	2.5	0.30	mg/L			08/23/18 04:39	5
Sulfate	14000		500	23	mg/L			08/23/18 05:01	100
Total Dissolved Solids (TDS)	21000		200	94	mg/L			08/15/18 16:11	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			08/15/18 17:47	1

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
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			08/15/18 15:24	1
Temperature	19.6	HF	1.0	1.0	Degrees C			08/15/18 15:24	1
Chloride	45		15	1.3	mg/L			08/22/18 11:32	5
Fluoride	ND		2.5	0.30	mg/L			08/22/18 11:32	5
Sulfate	4300		250	12	mg/L			08/22/18 11:54	50
Total Dissolved Solids (TDS)	4500		40	19	mg/L			08/15/18 16:11	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			08/15/18 17:47	1

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
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			08/15/18 15:27	1
Temperature	19.5	HF	1.0	1.0	Degrees C			08/15/18 15:27	1
Chloride	ND		3.0	0.25	mg/L			08/22/18 12:16	1
Fluoride	ND		0.50	0.060	mg/L			08/22/18 12:16	1
Sulfate	ND		5.0	0.23	mg/L			08/22/18 12:16	1
Total Dissolved Solids (TDS)	ND		100	47	mg/L			08/15/18 16:11	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			08/15/18 17:47	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.209		0.0972	0.0990	1.00	0.102	pCi/L	08/17/18 09:18	09/10/18 07:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.6		40 - 110					08/17/18 09:18	09/10/18 07:58	1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.244		0.105	0.107	1.00	0.114	pCi/L	08/17/18 09:18	09/10/18 07:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					08/17/18 09:18	09/10/18 07:58	1

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.352		0.120	0.124	1.00	0.111	pCi/L	08/17/18 09:18	09/10/18 07:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					08/17/18 09:18	09/10/18 07:58	1

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.347		0.115	0.119	1.00	0.100	pCi/L	08/17/18 09:18	09/10/18 07:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					08/17/18 09:18	09/10/18 07:59	1

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.250		0.0979	0.100	1.00	0.0802	pCi/L	08/17/18 09:18	09/10/18 07:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110					08/17/18 09:18	09/10/18 07:59	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.303		0.110	0.113	1.00	0.100	pCi/L	08/17/18 09:18	09/10/18 07:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					08/17/18 09:18	09/10/18 07:59	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0525	U	0.305	0.305	1.00	0.539	pCi/L	08/17/18 10:05	08/23/18 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.6		40 - 110					08/17/18 10:05	08/23/18 16:45	1
Y Carrier	87.1		40 - 110					08/17/18 10:05	08/23/18 16:45	1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.441	U	0.301	0.304	1.00	0.464	pCi/L	08/17/18 10:05	08/23/18 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					08/17/18 10:05	08/23/18 16:45	1
Y Carrier	88.6		40 - 110					08/17/18 10:05	08/23/18 16:45	1

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.469	U	0.324	0.327	1.00	0.506	pCi/L	08/17/18 10:05	08/23/18 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					08/17/18 10:05	08/23/18 16:45	1
Y Carrier	88.2		40 - 110					08/17/18 10:05	08/23/18 16:45	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.365	U	0.305	0.307	1.00	0.486	pCi/L	08/17/18 10:05	08/23/18 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					08/17/18 10:05	08/23/18 16:46	1
Y Carrier	87.1		40 - 110					08/17/18 10:05	08/23/18 16:46	1

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.576		0.338	0.342	1.00	0.511	pCi/L	08/17/18 10:05	08/23/18 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110					08/17/18 10:05	08/23/18 16:46	1
Y Carrier	88.2		40 - 110					08/17/18 10:05	08/23/18 16:46	1

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.180	U	0.289	0.290	1.00	0.488	pCi/L	08/17/18 10:05	08/23/18 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					08/17/18 10:05	08/23/18 16:46	1
Y Carrier	88.2		40 - 110					08/17/18 10:05	08/23/18 16:46	1

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

Client Sample ID: W-1
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.262	U	0.320	0.321	5.00	0.539	pCi/L		09/11/18 02:43	1

Client Sample ID: W-2
Date Collected: 08/13/18 16:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.686		0.319	0.322	5.00	0.464	pCi/L		09/11/18 02:43	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-113178-1

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

Client Sample ID: W-3
Date Collected: 08/13/18 17:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.821		0.346	0.350	5.00	0.506	pCi/L		09/11/18 02:43	1

Client Sample ID: W-4
Date Collected: 08/13/18 15:30
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.712		0.326	0.329	5.00	0.486	pCi/L		09/11/18 02:43	1

Client Sample ID: W-1D
Date Collected: 08/13/18 14:20
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.826		0.352	0.356	5.00	0.511	pCi/L		09/11/18 02:43	1

Client Sample ID: W-2EB
Date Collected: 08/13/18 16:35
Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.484	U	0.309	0.311	5.00	0.488	pCi/L		09/11/18 02:43	1

QC Sample Results

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

TestAmerica Job ID: 280-113178-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-341612/1-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341612

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		08/20/18 14:00	08/21/18 17:16	1

Lab Sample ID: LCS 240-341612/2-A
Matrix: Water
Analysis Batch: 341961

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341612

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.10		mg/L		110	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-341612/1-A
Matrix: Water
Analysis Batch: 342100

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341612

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		08/20/18 14:00	08/22/18 19:28	1
Barium	ND		0.0050	0.0022	mg/L		08/20/18 14:00	08/22/18 19:28	1
Cadmium	ND		0.0010	0.00021	mg/L		08/20/18 14:00	08/22/18 19:28	1
Chromium	0.00150	J	0.0020	0.00098	mg/L		08/20/18 14:00	08/22/18 19:28	1
Molybdenum	ND		0.010	0.0011	mg/L		08/20/18 14:00	08/22/18 19:28	1
Lead	ND		0.0010	0.00045	mg/L		08/20/18 14:00	08/22/18 19:28	1
Thallium	ND		0.0010	0.00020	mg/L		08/20/18 14:00	08/22/18 19:28	1
Calcium	ND		1.0	0.58	mg/L		08/20/18 14:00	08/22/18 19:28	1

Lab Sample ID: MB 240-341612/1-A
Matrix: Water
Analysis Batch: 345481

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 341612

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.00075	mg/L		08/20/18 14:00	09/14/18 15:55	1
Beryllium	0.000442	J	0.0010	0.00031	mg/L		08/20/18 14:00	09/14/18 15:55	1
Cobalt	ND		0.0010	0.00019	mg/L		08/20/18 14:00	09/14/18 15:55	1
Selenium	0.000892	J	0.0050	0.00089	mg/L		08/20/18 14:00	09/14/18 15:55	1
Lithium	ND		0.0080	0.0017	mg/L		08/20/18 14:00	09/14/18 15:55	1

Lab Sample ID: LCS 240-341612/3-A
Matrix: Water
Analysis Batch: 342100

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 341612

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.101		mg/L		101	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Cadmium	1.00	1.05		mg/L		105	80 - 120
Chromium	1.00	1.07		mg/L		107	80 - 120
Molybdenum	0.100	0.0941		mg/L		94	80 - 120
Lead	1.00	1.04		mg/L		104	80 - 120
Thallium	0.250	0.248		mg/L		99	80 - 120
Calcium	10.0	9.70		mg/L		97	80 - 120

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-113178-1

Lab Sample ID: LCS 240-341612/3-A

Matrix: Water

Analysis Batch: 345481

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 341612

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.961		mg/L		96	80 - 120
Beryllium	1.00	0.798		mg/L		80	80 - 120
Cobalt	1.00	1.03		mg/L		103	80 - 120
Selenium	1.00	0.975		mg/L		97	80 - 120
Lithium	0.100	0.0846		mg/L		85	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-341614/1-A

Matrix: Water

Analysis Batch: 341899

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 341614

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		08/20/18 14:00	08/21/18 12:07	1

Lab Sample ID: LCS 240-341614/2-A

Matrix: Water

Analysis Batch: 341899

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 341614

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.07		ug/L		101	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-426373/4

Matrix: Water

Analysis Batch: 426373

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-426934/6

Matrix: Water

Analysis Batch: 426934

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			08/21/18 10:55	1
Fluoride	0.0617	J	0.50	0.060	mg/L			08/21/18 10:55	1
Sulfate	ND		5.0	0.23	mg/L			08/21/18 10:55	1

Lab Sample ID: LCS 280-426934/4

Matrix: Water

Analysis Batch: 426934

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	94.7		mg/L		95	90 - 110
Fluoride	5.00	4.74		mg/L		95	90 - 110
Sulfate	100	91.2		mg/L		91	90 - 110

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-113178-1

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

Lab Sample ID: LCSD 280-426934/5
Matrix: Water
Analysis Batch: 426934

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	94.7		mg/L		95	90 - 110	0	10
Fluoride	5.00	4.81		mg/L		96	90 - 110	2	10
Sulfate	100	92.3		mg/L		92	90 - 110	1	10

Lab Sample ID: MRL 280-426934/3
Matrix: Water
Analysis Batch: 426934

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	2.33	J	mg/L		93	50 - 150
Fluoride	0.200	0.199	J	mg/L		100	50 - 150
Sulfate	2.50	2.42	J	mg/L		97	50 - 150

Lab Sample ID: MB 280-427109/6
Matrix: Water
Analysis Batch: 427109

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			08/22/18 11:03	1
Fluoride	ND		0.50	0.060	mg/L			08/22/18 11:03	1
Sulfate	ND		5.0	0.23	mg/L			08/22/18 11:03	1

Lab Sample ID: LCS 280-427109/4
Matrix: Water
Analysis Batch: 427109

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	5.31		mg/L		106	90 - 110
Sulfate	100	105		mg/L		105	90 - 110

Lab Sample ID: LCSD 280-427109/5
Matrix: Water
Analysis Batch: 427109

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	5.32		mg/L		106	90 - 110	0	10
Sulfate	100	105		mg/L		105	90 - 110	0	10

Lab Sample ID: MRL 280-427109/3
Matrix: Water
Analysis Batch: 427109

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	2.84	J	mg/L		114	50 - 150
Fluoride	0.200	0.217	J	mg/L		108	50 - 150
Sulfate	2.50	2.85	J	mg/L		114	50 - 150

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-113178-1

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

Lab Sample ID: MB 280-426276/1
Matrix: Water
Analysis Batch: 426276

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	-		08/15/18 16:11	1

Lab Sample ID: LCS 280-426276/2
Matrix: Water
Analysis Batch: 426276

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	495		mg/L	-	99	86 - 110

Lab Sample ID: 280-113178-1 DU
Matrix: Water
Analysis Batch: 426276

Client Sample ID: W-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4500		4520		mg/L	-	0.5	10

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

Lab Sample ID: MB 280-426294/1
Matrix: Water
Analysis Batch: 426294

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	-		08/15/18 17:47	1

Lab Sample ID: LCS 280-426294/2
Matrix: Water
Analysis Batch: 426294

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	91.6		mg/L	-	92	86 - 114

Lab Sample ID: LCSD 280-426294/3
Matrix: Water
Analysis Batch: 426294

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	0	20

Lab Sample ID: 280-113178-1 DU
Matrix: Water
Analysis Batch: 426294

Client Sample ID: W-1
Prep Type: Total/NA

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-113178-1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-383016/23-A
Matrix: Water
Analysis Batch: 388184

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383016

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.3123		0.111	0.115	1.00	0.105	pCi/L	08/17/18 09:18	09/10/18 09:16	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					08/17/18 09:18	09/10/18 09:16	1

Lab Sample ID: LCS 160-383016/1-A
Matrix: Water
Analysis Batch: 388183

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383016

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226		15.1	15.78		1.59	1.00	0.116	pCi/L	104	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	102		40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-383032/23-A
Matrix: Water
Analysis Batch: 384835

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383032

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.06023	U	0.355	0.355	1.00	0.635	pCi/L	08/17/18 10:05	08/23/18 16:38	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					08/17/18 10:05	08/23/18 16:38	1
Y Carrier	88.6		40 - 110					08/17/18 10:05	08/23/18 16:38	1

Lab Sample ID: LCS 160-383032/1-A
Matrix: Water
Analysis Batch: 384834

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383032

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228		14.8	14.73		1.64	1.00	0.453	pCi/L	100	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	102		40 - 110							
Y Carrier	89.7		40 - 110							

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-113178-1

Metals

Prep Batch: 341612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total Recoverable	Water	3005A	
280-113178-2	W-2	Total Recoverable	Water	3005A	
280-113178-3	W-3	Total Recoverable	Water	3005A	
280-113178-4	W-4	Total Recoverable	Water	3005A	
280-113178-5	W-1D	Total Recoverable	Water	3005A	
280-113178-6	W-2EB	Total Recoverable	Water	3005A	
MB 240-341612/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-341612/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-341612/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 341614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	7470A	
280-113178-2	W-2	Total/NA	Water	7470A	
280-113178-3	W-3	Total/NA	Water	7470A	
280-113178-4	W-4	Total/NA	Water	7470A	
280-113178-5	W-1D	Total/NA	Water	7470A	
280-113178-6	W-2EB	Total/NA	Water	7470A	
MB 240-341614/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-341614/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 341899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	7470A	341614
280-113178-2	W-2	Total/NA	Water	7470A	341614
280-113178-3	W-3	Total/NA	Water	7470A	341614
280-113178-4	W-4	Total/NA	Water	7470A	341614
280-113178-5	W-1D	Total/NA	Water	7470A	341614
280-113178-6	W-2EB	Total/NA	Water	7470A	341614
MB 240-341614/1-A	Method Blank	Total/NA	Water	7470A	341614
LCS 240-341614/2-A	Lab Control Sample	Total/NA	Water	7470A	341614

Analysis Batch: 341961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total Recoverable	Water	6010C	341612
280-113178-2	W-2	Total Recoverable	Water	6010C	341612
280-113178-3	W-3	Total Recoverable	Water	6010C	341612
280-113178-4	W-4	Total Recoverable	Water	6010C	341612
280-113178-5	W-1D	Total Recoverable	Water	6010C	341612
280-113178-6	W-2EB	Total Recoverable	Water	6010C	341612
MB 240-341612/1-A	Method Blank	Total Recoverable	Water	6010C	341612
LCS 240-341612/2-A	Lab Control Sample	Total Recoverable	Water	6010C	341612

Analysis Batch: 342100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total Recoverable	Water	6020A	341612
280-113178-2	W-2	Total Recoverable	Water	6020A	341612
280-113178-3	W-3	Total Recoverable	Water	6020A	341612
280-113178-4	W-4	Total Recoverable	Water	6020A	341612
280-113178-5	W-1D	Total Recoverable	Water	6020A	341612
280-113178-6	W-2EB	Total Recoverable	Water	6020A	341612

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-113178-1

Metals (Continued)

Analysis Batch: 342100 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-341612/1-A	Method Blank	Total Recoverable	Water	6020A	341612
LCS 240-341612/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341612

Analysis Batch: 345481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total Recoverable	Water	6020A	341612
280-113178-2	W-2	Total Recoverable	Water	6020A	341612
280-113178-3	W-3	Total Recoverable	Water	6020A	341612
280-113178-4	W-4	Total Recoverable	Water	6020A	341612
280-113178-5	W-1D	Total Recoverable	Water	6020A	341612
280-113178-6	W-2EB	Total Recoverable	Water	6020A	341612
MB 240-341612/1-A	Method Blank	Total Recoverable	Water	6020A	341612
LCS 240-341612/3-A	Lab Control Sample	Total Recoverable	Water	6020A	341612

General Chemistry

Analysis Batch: 426276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	SM 2540C	
280-113178-2	W-2	Total/NA	Water	SM 2540C	
280-113178-3	W-3	Total/NA	Water	SM 2540C	
280-113178-4	W-4	Total/NA	Water	SM 2540C	
280-113178-5	W-1D	Total/NA	Water	SM 2540C	
280-113178-6	W-2EB	Total/NA	Water	SM 2540C	
MB 280-426276/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-426276/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-113178-1 DU	W-1	Total/NA	Water	SM 2540C	

Analysis Batch: 426294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	SM 2540D	
280-113178-2	W-2	Total/NA	Water	SM 2540D	
280-113178-3	W-3	Total/NA	Water	SM 2540D	
280-113178-4	W-4	Total/NA	Water	SM 2540D	
280-113178-5	W-1D	Total/NA	Water	SM 2540D	
280-113178-6	W-2EB	Total/NA	Water	SM 2540D	
MB 280-426294/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-426294/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-426294/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-113178-1 DU	W-1	Total/NA	Water	SM 2540D	

Analysis Batch: 426373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	9040B	
280-113178-2	W-2	Total/NA	Water	9040B	
280-113178-3	W-3	Total/NA	Water	9040B	
280-113178-4	W-4	Total/NA	Water	9040B	
280-113178-5	W-1D	Total/NA	Water	9040B	
280-113178-6	W-2EB	Total/NA	Water	9040B	
LCS 280-426373/4	Lab Control Sample	Total/NA	Water	9040B	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-113178-1

General Chemistry (Continued)

Analysis Batch: 426934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	9056A	
280-113178-1	W-1	Total/NA	Water	9056A	
280-113178-2	W-2	Total/NA	Water	9056A	
280-113178-2	W-2	Total/NA	Water	9056A	
280-113178-3	W-3	Total/NA	Water	9056A	
280-113178-3	W-3	Total/NA	Water	9056A	
280-113178-4	W-4	Total/NA	Water	9056A	
MB 280-426934/6	Method Blank	Total/NA	Water	9056A	
LCS 280-426934/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-426934/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-426934/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 427109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-3	W-3	Total/NA	Water	9056A	
280-113178-4	W-4	Total/NA	Water	9056A	
280-113178-4	W-4	Total/NA	Water	9056A	
280-113178-5	W-1D	Total/NA	Water	9056A	
280-113178-5	W-1D	Total/NA	Water	9056A	
280-113178-6	W-2EB	Total/NA	Water	9056A	
MB 280-427109/6	Method Blank	Total/NA	Water	9056A	
LCS 280-427109/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-427109/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-427109/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 383016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	PrecSep-21	
280-113178-2	W-2	Total/NA	Water	PrecSep-21	
280-113178-3	W-3	Total/NA	Water	PrecSep-21	
280-113178-4	W-4	Total/NA	Water	PrecSep-21	
280-113178-5	W-1D	Total/NA	Water	PrecSep-21	
280-113178-6	W-2EB	Total/NA	Water	PrecSep-21	
MB 160-383016/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-383016/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 383032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-113178-1	W-1	Total/NA	Water	PrecSep_0	
280-113178-2	W-2	Total/NA	Water	PrecSep_0	
280-113178-3	W-3	Total/NA	Water	PrecSep_0	
280-113178-4	W-4	Total/NA	Water	PrecSep_0	
280-113178-5	W-1D	Total/NA	Water	PrecSep_0	
280-113178-6	W-2EB	Total/NA	Water	PrecSep_0	
MB 160-383032/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-383032/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-1

Date Collected: 08/13/18 14:20

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-1

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	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 18:31	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342100	08/22/18 20:58	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			345481	09/14/18 16:04	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	341614	08/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341899	08/21/18 12:30	AJC	TAL CAN
Total/NA	Analysis	9040B		1			426373	08/15/18 15:06	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	426934	08/22/18 11:46	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	426934	08/22/18 12:08	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	426276	08/15/18 16:11	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426294	08/15/18 17:47	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			749.80 mL	1.0 g	383016	08/17/18 09:18	JLC	TAL SL
Total/NA	Analysis	9315		1			388183	09/10/18 07:58	CDR	TAL SL
Total/NA	Prep	PrecSep_0			749.80 mL	1.0 g	383032	08/17/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			384834	08/23/18 16:45	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: W-2

Date Collected: 08/13/18 16:20

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-2

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	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 18:36	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342100	08/22/18 21:02	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			345481	09/14/18 16:09	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	341614	08/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341899	08/21/18 12:32	AJC	TAL CAN
Total/NA	Analysis	9040B		1			426373	08/15/18 15:10	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	426934	08/22/18 12:31	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	426934	08/22/18 12:53	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	426276	08/15/18 16:11	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426294	08/15/18 17:47	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.23 mL	1.0 g	383016	08/17/18 09:18	JLC	TAL SL
Total/NA	Analysis	9315		1			388183	09/10/18 07:58	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.23 mL	1.0 g	383032	08/17/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			384834	08/23/18 16:45	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-3

Date Collected: 08/13/18 17:35

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-3

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	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 18:41	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342100	08/22/18 21:07	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			345481	09/14/18 16:14	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	341614	08/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341899	08/21/18 12:34	AJC	TAL CAN
Total/NA	Analysis	9040B		1			426373	08/15/18 15:14	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	426934	08/22/18 14:00	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	426934	08/22/18 16:30	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	427109	08/23/18 04:17	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	426276	08/15/18 16:11	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426294	08/15/18 17:47	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.28 mL	1.0 g	383016	08/17/18 09:18	JLC	TAL SL
Total/NA	Analysis	9315		1			388183	09/10/18 07:58	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.28 mL	1.0 g	383032	08/17/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			384834	08/23/18 16:45	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: W-4

Date Collected: 08/13/18 15:30

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4

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	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 18:46	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342100	08/22/18 21:11	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			345481	09/14/18 16:18	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	341614	08/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341899	08/21/18 12:40	AJC	TAL CAN
Total/NA	Analysis	9040B		1			426373	08/15/18 15:19	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	426934	08/22/18 16:52	TLP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	427109	08/23/18 04:39	TLP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	427109	08/23/18 05:01	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	426276	08/15/18 16:11	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426294	08/15/18 17:47	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.27 mL	1.0 g	383016	08/17/18 09:18	JLC	TAL SL
Total/NA	Analysis	9315		1			388184	09/10/18 07:59	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.27 mL	1.0 g	383032	08/17/18 10:05	JLC	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-4

Date Collected: 08/13/18 15:30

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9320		1			384834	08/23/18 16:46	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: W-1D

Date Collected: 08/13/18 14:20

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-5

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	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 18:50	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342100	08/22/18 21:16	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			345481	09/14/18 16:23	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	341614	08/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341899	08/21/18 12:42	AJC	TAL CAN
Total/NA	Analysis	9040B		1			426373	08/15/18 15:24	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	427109	08/22/18 11:32	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	427109	08/22/18 11:54	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	426276	08/15/18 16:11	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426294	08/15/18 17:47	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.42 mL	1.0 g	383016	08/17/18 09:18	JLC	TAL SL
Total/NA	Analysis	9315		1			388184	09/10/18 07:59	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.42 mL	1.0 g	383032	08/17/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			384834	08/23/18 16:46	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Client Sample ID: W-2EB

Date Collected: 08/13/18 16:35

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6

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	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			341961	08/21/18 18:55	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			342100	08/22/18 21:20	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	341612	08/20/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			345481	09/14/18 16:28	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	341614	08/20/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			341899	08/21/18 12:44	AJC	TAL CAN
Total/NA	Analysis	9040B		1			426373	08/15/18 15:27	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	427109	08/22/18 12:16	TLP	TAL DEN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-113178-1

Client Sample ID: W-2EB

Date Collected: 08/13/18 16:35

Date Received: 08/14/18 14:21

Lab Sample ID: 280-113178-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	426276	08/15/18 16:11	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	426294	08/15/18 17:47	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.24 mL	1.0 g	383016	08/17/18 09:18	JLC	TAL SL
Total/NA	Analysis	9315		1			388184	09/10/18 07:59	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.24 mL	1.0 g	383032	08/17/18 10:05	JLC	TAL SL
Total/NA	Analysis	9320		1			384834	08/23/18 16:46	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			388346	09/11/18 02:43	MAR	TAL SL

Laboratory References:

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

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

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-113178-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-113178-1

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
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

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

TestAmerica Denver

4955 Yarrow Street
Avada, CO 80002
Phone (303) 726-0100 Fax (303) 431-7171

Chain of Custody Record

Client Information		Sample ID: TAK KENT		Lab ID: Stephanie Rothmeyer		COC No: 280-77540-25460-1	
Client Contact: Anna Lundin		Phone: 7209337496		E-Mail: stephanie.rothmeyer@testamericadn.com		Page: Page 1 of 1	
Company: HDR Inc		Due Date Requested:		Analysis Requested:		Job #:	
Address: 9701 S. Meridian Blvd Suite 400		City: Englewood		State: CO		Zip: 80112	
Phone: 734-283-7188 (Tel)		Fax: 734-283-7188 (Tel)		Project Name: Xcel Energy GW CCR Monitoring - Hayden		Project #:	
Email: anna.lundin@hdrinc.com		Project #:		Project #:		Project #:	
Site: Colorado		SSOW#: 28014377		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Camp, G=Grab)	Matrix (M=Water, A=Acid, S=Soil, D=Sludge, O=Other)	Field Filtered Sample (Yes or No)	
W-1	8-13-12 1420	5	Water			2540C - Total Dissolved Solids (TDS)	
W-2	8-13-12 1630	15	Water			6010C, 6020A, 7470A	
W-3	8-13-12 1735	5	Water			9040B, 9055A, 26D	
W-4	8-13-12 1530	6	Water			2540D - Total Suspended Solids	
W-5	8-13-12 1420	6	Water			9315, Ra226, 9320, Ra228	
W-6	8-13-12 1635	6	Water				
Equipment: W-1-D							
Equipment: W-2-B							
Equipment: W-3-B							
Equipment: W-4-B							
Equipment: W-5-B							
Equipment: W-6-B							
Possible Hazard Identification:							
☒ Non-Hazard		☐ Flammable		☐ Skin Irritant		☐ Poison B	
☐ Unknown		☐ Radiological					
Deliverable Requested: I, II, III, IV, Other (specify)							
Empty Kit Relinquished by: Anna Kent		Date: 17 AUG 2018		Time: 1425		Method of Shipment:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Custody Seal Intact:		Custody Seal No:				Counter Temperature: 3.0	
A Yes A No						B 0	



280-113178 Chain of Custody



Client Information (Sub Contract Lab)						Sample:		Lab PM		Carrier Tracking No(s)		CCC No.					
Company: TestAmerica Laboratories, Inc.						Phone:		Rothmeyer, Stephanie K				280-4512411					
Address: 13715 Rider Trail North,						E-Mail: stephanie.rothmeyer@testamericainc.com		State of Origin: Colorado				Page: Page 1 of 1					
City: Earth City												Job #:					
State, Zip: MO, 63045												Preservation Codes:					
Phone: 314-298-8566(Tel) 314-298-8757(Fax)												A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO ₄ F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:					
Email:												M - Hexamine N - None O - Arsenic P - Na ₂ O/S Q - Na ₂ SO ₃ R - Na ₂ S ₂ O ₃ S - H ₂ SO ₄ T - TSP Dodecahydrate U - Acetic Acid V - MCAA W - pH 4.5 Z - other (specify)					
Project Name: Xcel Energy GW CCR Monitoring - Hayden						Project #: 28014377											
Site: Xcel Energy CCR - Hayden Station						SSOW#:											
Sample Identification - Client ID (Lab ID)						Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (w-water, s-solid, o-on-site)	Field Filtered Sample (Yes or No)	Performance MS/MSD (Yes or No)	915 Ra226/frcsep, 21 Radium-226 (f/r for Ra-	920 Ra228/frcsep, 9 Radium-228 (f/r for Ra-	R228Ra-228 SUB	R228Ra-228 GPPC/Combined Radium-226 and Radium-228	Total Number of Containers	Special Instructions/Note:
W-1 (280-113178-1)						8/13/18	14:20 Mountain		Water	X	X	X	X	X	X	1	
W-2 (280-113178-2)						8/13/18	16:20 Mountain		Water	X	X	X	X	X	X	1	
W-3 (280-113178-3)						8/13/18	17:35 Mountain		Water	X	X	X	X	X	X	1	
W-4 (280-113178-4)						8/13/18	15:30 Mountain		Water	X	X	X	X	X	X	1	
W-1D (280-113178-5)						8/13/18	14:20 Mountain		Water	X	X	X	X	X	X	1	
W-2EB (280-113178-6)						8/13/18	16:35 Mountain		Water	X	X	X	X	X	X	1	

Note: Since laboratory accreditation are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon our 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/matrix being analyzed, the samples must be shipped back to the TestAmerica Laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed _____
Deliverable Requested: I, II, III, IV, Other (specify) _____
Primary Deliverable Rank: 4
Empty Kit Relinquished by: _____
Relinquished by: _____
Relinquished by: _____
Relinquished by: _____
Custody Seal Intact: A Yes A No _____
Custody Seal No: _____

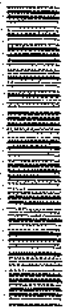
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Special Instructions/QC Requirements: _____

Date: _____ Time: _____ Method of Shipment: _____
Received by: _____ Company: TA
Received by: _____ Company: TA
Received by: _____ Company: TA
Cooler Temperature(s) °C and Other Remarks: _____

Phone (303) 736-0100 Fax (303) 431-7171

2020.10.20

Chain of Custody Record



Los Angeles

1. 凡在本市行政区域内从事经营活动的个体工商户，均须依法办理营业执照。
 2. 申请营业执照应当具备下列条件：
 (一) 有与经营业务相适应的资金；
 (二) 有与经营业务相适应的场地和设施；
 (三) 有与经营业务相适应的从业人员；
 (四) 有健全的财务管理制度；
 (五) 法律、法规规定的其他条件。
 3. 申请营业执照应当向所在地工商行政管理部门提出申请，并提交下列材料：
 (一) 申请人身份证明；
 (二) 经营场所使用证明；
 (三) 资金证明；
 (四) 从业人员身份证明；
 (五) 财务管理制度。
 4. 工商行政管理部门应当自收到申请之日起三十日内作出是否核发营业执照的决定。
 5. 营业执照有效期为五年。有效期满需要继续经营的，应当在有效期满前六十日内申请换领。
 6. 营业执照遗失或者损毁的，应当及时申请补领或者换领。
 7. 违反本办法规定的，将依法予以处罚。
 8. 本办法自发布之日起施行。

[illegible]

TestAmerica Canton Sample Receipt Form/Narrative				Login # : _____
Canton Facility				
Client <u>TA Denver</u>	Site Name _____	Cooler unpacked by: <u>8/17/18</u>		
Cooler Received on <u>8/17/18</u>	Opened on <u>8/17/18</u>			
FedEx: 1 st Grd <u>Exp</u>	UPS <u>FAS</u>	Clipper _____	Client Drop Off _____	TestAmerica Courier <u>Other</u>
Receipt After-hours: Drop-off Date/Time _____		Storage Location _____		
TestAmerica Cooler # <u>TA</u>	Foam Box _____	Client Cooler _____	Box _____	Other _____
Packing material used: <u>Bubble Wrap</u> <u>Foam</u> <u>Plastic Bag</u> <u>None</u> <u>Other</u> _____				
COOLANT: <u>Wet Ice</u> <u>Blue Ice</u> <u>Dry Ice</u> <u>Water</u> <u>None</u> _____				
1. Cooler temperature upon receipt _____ ☐ See Multiple Cooler Form				
IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. <u>20.2</u> °C Corrected Cooler Temp. <u>20.2</u> °C				
IR GUN #36 (CF -0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C				
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u>				
-Were the seals on the outside of the cooler(s) signed & dated? <u>Yes</u> <u>No</u> <u>NA</u>				
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? <u>Yes</u> <u>No</u> <u>NA</u>				
-Were tamper/custody seals intact and uncompromised? <u>Yes</u> <u>No</u> <u>NA</u>				
3. Shippers' packing slip attached to the cooler(s)? <u>Yes</u> <u>No</u>				
4. Did custody papers accompany the sample(s)? <u>Yes</u> <u>No</u>				
5. Were the custody papers relinquished & signed in the appropriate place? <u>Yes</u> <u>No</u>				
6. Was/were the person(s) who collected the samples clearly identified on the COC? <u>Yes</u> <u>No</u>				
7. Did all bottles arrive in good condition (Unbroken)? <u>Yes</u> <u>No</u>				
8. Could all bottle labels be reconciled with the COC? <u>Yes</u> <u>No</u>				
9. Were correct bottle(s) used for the test(s) indicated? <u>Yes</u> <u>No</u>				
10. Sufficient quantity received to perform indicated analyses? <u>Yes</u> <u>No</u>				
11. Are these work share samples? <u>Yes</u> <u>No</u>				
If yes, Questions 12-16 have been checked at the originating laboratory.				
12. Were all preserved sample(s) at the correct pH upon receipt? <u>Yes</u> <u>No</u> <u>NA</u> pH Strip Lot# <u>HC849161</u>				
13. Were VOAs on the COC? <u>Yes</u> <u>No</u>				
14. Were air bubbles >6 mm in any VOA vials? <u>Yes</u> <u>No</u> <u>NA</u>				
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ <u>Yes</u> <u>No</u>				
16. Was a LL Hg or Me Hg trip blank present? <u>Yes</u> <u>No</u>				
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____				
Concerning _____				

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES 	Samples processed by: _____
18. SAMPLE CONDITION Sample(s) _____ were received after the recommended holding time had expired. Sample(s) _____ were received in a broken container. Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)	
19. SAMPLE PRESERVATION Sample(s) _____ were further preserved in the laboratory. Time preserved: _____ Preservative(s) added/Lot number(s): _____	

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-113178-1

Login Number: 113178

List Source: TestAmerica Denver

List Number: 1

Creator: Diffendall, Jessica L

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (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: 280-113178-1

Login Number: 113178

List Number: 2

Creator: Carter, Kevin M

List Source: TestAmerica St. Louis

List Creation: 08/16/18 11:06 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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	3.4
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-113178-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-113178-1	W-1	90.6	
280-113178-2	W-2	97.9	
280-113178-3	W-3	102	
280-113178-4	W-4	97.6	
280-113178-5	W-1D	92.9	
280-113178-6	W-2EB	97.3	
LCS 160-383016/1-A	Lab Control Sample	102	
MB 160-383016/23-A	Method Blank	94.4	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-113178-1	W-1	90.6	87.1
280-113178-2	W-2	97.9	88.6
280-113178-3	W-3	102	88.2
280-113178-4	W-4	97.6	87.1
280-113178-5	W-1D	92.9	88.2
280-113178-6	W-2EB	97.3	88.2
LCS 160-383032/1-A	Lab Control Sample	102	89.7
MB 160-383032/23-A	Method Blank	94.4	88.6
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-114168-1

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

For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:

10/11/2018 9:09:11 PM

Darlene Bandy, Project Manager I

(303)736-0188

darlene.bandy@testamericainc.com

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results through

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www.testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-114168-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
H	Sample was prepped or analyzed beyond the specified holding time

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-114168-1

Job ID: 280-114168-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-114168-1

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

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

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

RECEIPT

The samples were received on 9/11/2018 12:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.3° C and 4.9° C.

TOTAL RECOVERABLE METALS

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 09/18/2018 and analyzed on 09/19/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 09/18/2018 and analyzed on 10/04/2018.

Calcium failed the recovery criteria low for the MS of sample W-1 (280-114168-1) in batch 240-348697. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

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

TOTAL MERCURY

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 09/18/2018 and analyzed on 09/25/2018.

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

TOTAL DISSOLVED SOLIDS

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 09/12/2018 and

Case Narrative

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

TestAmerica Job ID: 280-114168-1

Job ID: 280-114168-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

09/24/2018.

Total Dissolved Solids (TDS) was detected in method blank MB 280-429451/1 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details. The following samples are associated:

Reanalysis of the following sample was performed outside of the analytical holding time: W-4EB (280-114168-6). The sample was initially analyzed within hold on 9/12/2018, but at a tenth of the nominal volume. The sample was reanalyzed out of hold on 9/24/2018 at the full nominal volume.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 09/11/2018.

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

CORROSIVITY (PH)

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 09/12/2018 and 09/14/2018.

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

ANIONS (28 DAYS)

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 09/26/2018.

Sulfate was detected in method blank MB 280-430880/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Samples W-1 (280-114168-1)[2X], W-1 (280-114168-1)[20X], W-2 (280-114168-2)[5X], W-2 (280-114168-2)[50X], W-3 (280-114168-3)[5X], W-3 (280-114168-3)[50X], W-4 (280-114168-4)[100X], W-4 (280-114168-4)[5X], W-1D (280-114168-5)[2X] and W-1D (280-114168-5)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

RADIUM-226 (GFPC)

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 09/17/2018 and analyzed on 10/09/2018.

Sample aliquots for W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5), and W-4EB (280-114168-6) were reduced due to limited sample volume.

Radium-226 was detected in method blank MB 160-389670/22-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The barium carrier recovery is outside the upper control limit (110%) for the following samples: W-3 (280-114168-3) and W-4 (280-114168-4). The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference. The pellets were noted as larger during the initial precipitation during the out of ingrowth process.

Case Narrative

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

TestAmerica Job ID: 280-114168-1

Job ID: 280-114168-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The barium carrier recovery is outside the upper control limit (110%) for the following sample: W-3 (280-114168-3) and W-4 (280-114168-4). There was physical evidence of matrix interference apparent during the initial preparation of the sample. The pellets were noted as larger during the initial precipitation during the out of ingrowth process. The LCS/LCSD (laboratory control sample/laboratory control sample duplicate) have acceptable spike recoveries demonstrating acceptable sample preparation and instrument performance. The sample have been truncated to 100% to reduce any potential bias a high carrier recovery may have. The data have been reported with this narrative.

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

RADIUM-228

Samples W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 09/17/2018 and analyzed on 09/24/2018.

Sample aliquots for W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5), and W-4EB (280-114168-6) were reduced due to limited sample volume.

The barium carrier recovery is outside the upper control limit (110%)for the following samples: W-3 (280-114168-3) and W-4 (280-114168-4). . The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference. The pellets were noted as larger during the initial precipitation during the out of ingrowth process.

The following samples have barium recoveries above the 110% QC limit; 280-114168-A-3-B (117%), 280-114168-A-4-B (111%): W-3 (280-114168-3) and W-4 (280-114168-4). The LCS/LCSD (laboratory control sample/laboratory control sample duplicate) have acceptable spike recoveries demonstrating acceptable sample preparation and instrument performance. The samples have been truncated to 100% to reduce any potential bias a high carrier recovery may have. The data have been reported with this narrative.

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 W-1 (280-114168-1), W-2 (280-114168-2), W-3 (280-114168-3), W-4 (280-114168-4), W-1D (280-114168-5) and W-4EB (280-114168-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 10/10/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-1

Lab Sample ID: 280-114168-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.58		0.10	0.023	mg/L	1			6010C	Total
Barium	0.011		0.0050	0.0022	mg/L	1			6020A	Recoverable Total
Beryllium	0.00071	J	0.0010	0.00031	mg/L	1			6020A	Recoverable Total
Cadmium	0.00024	J	0.0010	0.00021	mg/L	1			6020A	Recoverable Total
Cobalt	0.00088	J	0.0010	0.00019	mg/L	1			6020A	Recoverable Total
Molybdenum	0.0037	J	0.010	0.0011	mg/L	1			6020A	Recoverable Total
Selenium	0.016		0.0050	0.00089	mg/L	1			6020A	Recoverable Total
Lithium	0.28		0.0080	0.0017	mg/L	1			6020A	Recoverable Total
Calcium	340		1.0	0.58	mg/L	1			6020A	Recoverable Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	41		6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.25	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	2500	B	100	4.6	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4500	B	40	19	mg/L	1			SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-114168-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	8.8		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0060		0.0050	0.0022	mg/L	1			6020A	Recoverable Total
Beryllium	0.00068	J	0.0010	0.00031	mg/L	1			6020A	Recoverable Total
Cobalt	0.0018		0.0010	0.00019	mg/L	1			6020A	Recoverable Total
Molybdenum	0.0037	J	0.010	0.0011	mg/L	1			6020A	Recoverable Total
Selenium	0.0039	J	0.0050	0.00089	mg/L	1			6020A	Recoverable Total
Lithium	0.63		0.0080	0.0017	mg/L	1			6020A	Recoverable Total
Calcium	370		1.0	0.58	mg/L	1			6020A	Recoverable Total
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	82		15	1.3	mg/L	5			9056A	Total/NA
Fluoride	0.45	J	2.5	0.30	mg/L	5			9056A	Total/NA
Sulfate	4600	B	250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	7300	B	100	47	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: W-3

Lab Sample ID: 280-114168-3

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-3 (Continued)

Lab Sample ID: 280-114168-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.79		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0071		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00034	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0021		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0031	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.015		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	1.2		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.50	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	8000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	12000	B	200	94	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-114168-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.88		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0083		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00023	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0073		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0015	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.72		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Calcium	360		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	370		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.57	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	15000	B	500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	20000	B	200	94	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: W-1D

Lab Sample ID: 280-114168-5

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-1D (Continued)

Lab Sample ID: 280-114168-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.66		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0099		0.0050	0.0022	mg/L	1			6020A	Recoverable
Cobalt	0.00085	J	0.0010	0.00019	mg/L	1			6020A	Total
Molybdenum	0.0037	J	0.010	0.0011	mg/L	1			6020A	Recoverable
Selenium	0.015		0.0050	0.00089	mg/L	1			6020A	Total
Lithium	0.29		0.0080	0.0017	mg/L	1			6020A	Recoverable
Calcium	350		1.0	0.58	mg/L	1			6020A	Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1			9040B	Recoverable
Temperature	20.5	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	41		6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.25	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	2600	B	100	4.6	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4400	B	40	19	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	1.2	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-4EB

Lab Sample ID: 280-114168-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.2	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	20.9	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Sulfate	0.33	J B	5.0	0.23	mg/L	1			9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-114168-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-114168-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-114168-1	W-1	Water	09/10/18 14:10	09/11/18 12:55
280-114168-2	W-2	Water	09/10/18 16:50	09/11/18 12:55
280-114168-3	W-3	Water	09/10/18 18:00	09/11/18 12:55
280-114168-4	W-4	Water	09/10/18 15:25	09/11/18 12:55
280-114168-5	W-1D	Water	09/10/18 14:10	09/11/18 12:55
280-114168-6	W-4EB	Water	09/10/18 15:35	09/11/18 12:55

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.58		0.10	0.023	mg/L	-	09/18/18 15:00	09/19/18 13:03	1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.8		0.10	0.023	mg/L	-	09/18/18 15:00	09/19/18 13:33	1

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.79		0.10	0.023	mg/L	-	09/18/18 15:00	09/19/18 13:38	1

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.88		0.10	0.023	mg/L	-	09/18/18 15:00	09/19/18 13:43	1

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.66		0.10	0.023	mg/L	-	09/18/18 15:00	09/19/18 13:47	1

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L	-	09/18/18 15:00	09/19/18 13:52	1

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

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Arsenic	ND		0.0050	0.00075	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Barium	0.011		0.0050	0.0022	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Beryllium	0.00071	J	0.0010	0.00031	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Cadmium	0.00024	J	0.0010	0.00021	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Cobalt	0.00088	J	0.0010	0.00019	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Chromium	ND		0.0020	0.00098	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Molybdenum	0.0037	J	0.010	0.0011	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Lead	ND		0.0010	0.00045	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Selenium	0.016		0.0050	0.00089	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Thallium	ND		0.0010	0.00020	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Lithium	0.28		0.0080	0.0017	mg/L	-	09/18/18 15:00	10/04/18 20:46	1
Calcium	340		1.0	0.58	mg/L	-	09/18/18 15:00	10/04/18 20:46	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/04/18 20:56	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/04/18 20:56	1
Barium	0.0060		0.0050	0.0022	mg/L		09/18/18 15:00	10/04/18 20:56	1
Beryllium	0.00068	J	0.0010	0.00031	mg/L		09/18/18 15:00	10/04/18 20:56	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/04/18 20:56	1
Cobalt	0.0018		0.0010	0.00019	mg/L		09/18/18 15:00	10/04/18 20:56	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/04/18 20:56	1
Molybdenum	0.0037	J	0.010	0.0011	mg/L		09/18/18 15:00	10/04/18 20:56	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/04/18 20:56	1
Selenium	0.0039	J	0.0050	0.00089	mg/L		09/18/18 15:00	10/04/18 20:56	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/04/18 20:56	1
Lithium	0.63		0.0080	0.0017	mg/L		09/18/18 15:00	10/04/18 20:56	1
Calcium	370		1.0	0.58	mg/L		09/18/18 15:00	10/04/18 20:56	1

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/04/18 20:59	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/04/18 20:59	1
Barium	0.0071		0.0050	0.0022	mg/L		09/18/18 15:00	10/04/18 20:59	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/04/18 20:59	1
Cadmium	0.00034	J	0.0010	0.00021	mg/L		09/18/18 15:00	10/04/18 20:59	1
Cobalt	0.0021		0.0010	0.00019	mg/L		09/18/18 15:00	10/04/18 20:59	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/04/18 20:59	1
Molybdenum	0.0031	J	0.010	0.0011	mg/L		09/18/18 15:00	10/04/18 20:59	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/04/18 20:59	1
Selenium	0.015		0.0050	0.00089	mg/L		09/18/18 15:00	10/04/18 20:59	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/04/18 20:59	1
Lithium	1.2		0.0080	0.0017	mg/L		09/18/18 15:00	10/04/18 20:59	1
Calcium	390		1.0	0.58	mg/L		09/18/18 15:00	10/04/18 20:59	1

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/04/18 21:01	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/04/18 21:01	1
Barium	0.0083		0.0050	0.0022	mg/L		09/18/18 15:00	10/04/18 21:01	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/04/18 21:01	1
Cadmium	0.00023	J	0.0010	0.00021	mg/L		09/18/18 15:00	10/04/18 21:01	1
Cobalt	0.0073		0.0010	0.00019	mg/L		09/18/18 15:00	10/04/18 21:01	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/04/18 21:01	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		09/18/18 15:00	10/04/18 21:01	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/04/18 21:01	1
Selenium	0.0015	J	0.0050	0.00089	mg/L		09/18/18 15:00	10/04/18 21:01	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/04/18 21:01	1
Lithium	0.72		0.0080	0.0017	mg/L		09/18/18 15:00	10/04/18 21:01	1
Calcium	360		1.0	0.58	mg/L		09/18/18 15:00	10/04/18 21:01	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/04/18 21:03	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/04/18 21:03	1
Barium	0.0099		0.0050	0.0022	mg/L		09/18/18 15:00	10/04/18 21:03	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/04/18 21:03	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/04/18 21:03	1
Cobalt	0.00085	J	0.0010	0.00019	mg/L		09/18/18 15:00	10/04/18 21:03	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/04/18 21:03	1
Molybdenum	0.0037	J	0.010	0.0011	mg/L		09/18/18 15:00	10/04/18 21:03	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/04/18 21:03	1
Selenium	0.015		0.0050	0.00089	mg/L		09/18/18 15:00	10/04/18 21:03	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/04/18 21:03	1
Lithium	0.29		0.0080	0.0017	mg/L		09/18/18 15:00	10/04/18 21:03	1
Calcium	350		1.0	0.58	mg/L		09/18/18 15:00	10/04/18 21:03	1

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/04/18 21:10	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/04/18 21:10	1
Barium	ND		0.0050	0.0022	mg/L		09/18/18 15:00	10/04/18 21:10	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/04/18 21:10	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/04/18 21:10	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/04/18 21:10	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/04/18 21:10	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/04/18 21:10	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/04/18 21:10	1
Selenium	ND		0.0050	0.00089	mg/L		09/18/18 15:00	10/04/18 21:10	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/04/18 21:10	1
Lithium	ND		0.0080	0.0017	mg/L		09/18/18 15:00	10/04/18 21:10	1
Calcium	ND		1.0	0.58	mg/L		09/18/18 15:00	10/04/18 21:10	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:34	1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:37	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:39	1

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:41	1

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:43	1

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:44	1

General Chemistry

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
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			09/12/18 22:22	1
Temperature	20.6	HF	1.0	1.0	Degrees C			09/12/18 22:22	1
Chloride	41		6.0	0.51	mg/L			09/26/18 08:50	2
Fluoride	0.25	J	1.0	0.12	mg/L			09/26/18 08:50	2
Sulfate	2500	B	100	4.6	mg/L			09/26/18 09:08	20
Total Dissolved Solids (TDS)	4500	B	40	19	mg/L			09/12/18 19:49	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/11/18 18:17	1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
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			09/12/18 22:46	1
Temperature	20.8	HF	1.0	1.0	Degrees C			09/12/18 22:46	1
Chloride	82		15	1.3	mg/L			09/26/18 10:25	5
Fluoride	0.45	J	2.5	0.30	mg/L			09/26/18 10:25	5
Sulfate	4600	B	250	12	mg/L			09/26/18 09:27	50
Total Dissolved Solids (TDS)	7300	B	100	47	mg/L			09/12/18 19:49	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			09/11/18 18:17	1

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
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			09/12/18 22:51	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

General Chemistry (Continued)

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.3	HF	1.0	1.0	Degrees C			09/12/18 22:51	1
Chloride	190		15	1.3	mg/L			09/26/18 10:44	5
Fluoride	0.50	J	2.5	0.30	mg/L			09/26/18 10:44	5
Sulfate	8000	B	250	12	mg/L			09/26/18 11:03	50
Total Dissolved Solids (TDS)	12000	B	200	94	mg/L			09/12/18 19:49	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			09/11/18 18:17	1

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
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			09/12/18 22:37	1
Temperature	20.4	HF	1.0	1.0	Degrees C			09/12/18 22:37	1
Chloride	370		15	1.3	mg/L			09/26/18 11:21	5
Fluoride	0.57	J	2.5	0.30	mg/L			09/26/18 11:21	5
Sulfate	15000	B	500	23	mg/L			09/26/18 11:40	100
Total Dissolved Solids (TDS)	20000	B	200	94	mg/L			09/12/18 19:49	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			09/11/18 18:17	1

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
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			09/12/18 21:16	1
Temperature	20.5	HF	1.0	1.0	Degrees C			09/12/18 21:16	1
Chloride	41		6.0	0.51	mg/L			09/26/18 11:59	2
Fluoride	0.25	J	1.0	0.12	mg/L			09/26/18 11:59	2
Sulfate	2600	B	100	4.6	mg/L			09/26/18 12:18	20
Total Dissolved Solids (TDS)	4400	B	40	19	mg/L			09/12/18 19:49	1
Total Suspended Solids	1.2	J	4.0	1.1	mg/L			09/11/18 18:17	1

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
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			09/14/18 20:07	1
Temperature	20.9	HF	1.0	1.0	Degrees C			09/14/18 20:07	1
Chloride	ND		3.0	0.25	mg/L			09/26/18 12:53	1
Fluoride	ND		0.50	0.060	mg/L			09/26/18 12:53	1
Sulfate	0.33	J B	5.0	0.23	mg/L			09/26/18 12:53	1
Total Dissolved Solids (TDS)	ND	H	10	4.7	mg/L			09/24/18 08:04	1
Total Suspended Solids	ND		4.0	1.1	mg/L			09/11/18 18:17	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.404		0.121	0.126	1.00	0.0957	pCi/L	09/17/18 08:49	10/09/18 04:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110					09/17/18 08:49	10/09/18 04:45	1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.299		0.108	0.111	1.00	0.102	pCi/L	09/17/18 08:49	10/09/18 04:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					09/17/18 08:49	10/09/18 04:46	1

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.228		0.0991	0.101	1.00	0.0996	pCi/L	09/17/18 08:49	10/09/18 04:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	117	X	40 - 110					09/17/18 08:49	10/09/18 04:46	1

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.443		0.135	0.141	1.00	0.120	pCi/L	09/17/18 08:49	10/09/18 04:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	111	X	40 - 110					09/17/18 08:49	10/09/18 04:46	1

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.295		0.108	0.111	1.00	0.0992	pCi/L	09/17/18 08:49	10/09/18 04:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					09/17/18 08:49	10/09/18 04:46	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.242		0.108	0.110	1.00	0.120	pCi/L	09/17/18 08:49	10/09/18 04:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	110		40 - 110					09/17/18 08:49	10/09/18 04:49	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.649		0.351	0.356	1.00	0.533	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	82.6		40 - 110					09/17/18 09:36	09/24/18 16:40	1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0864	U	0.293	0.293	1.00	0.508	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	82.6		40 - 110					09/17/18 09:36	09/24/18 16:40	1

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.413	U	0.346	0.348	1.00	0.553	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	117	X	40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	81.9		40 - 110					09/17/18 09:36	09/24/18 16:40	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.560		0.347	0.351	1.00	0.534	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	111	X	40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	82.6		40 - 110					09/17/18 09:36	09/24/18 16:40	1

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.587		0.304	0.309	1.00	0.448	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	83.4		40 - 110					09/17/18 09:36	09/24/18 16:40	1

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.311	U	0.269	0.270	1.00	0.429	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	110		40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	83.4		40 - 110					09/17/18 09:36	09/24/18 16:40	1

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

Client Sample ID: W-1
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.05		0.371	0.378	5.00	0.533	pCi/L		10/10/18 11:39	1

Client Sample ID: W-2
Date Collected: 09/10/18 16:50
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.385	U	0.312	0.313	5.00	0.508	pCi/L		10/10/18 11:39	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Client Sample ID: W-3
Date Collected: 09/10/18 18:00
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.641		0.360	0.362	5.00	0.553	pCi/L		10/10/18 11:39	1

Client Sample ID: W-4
Date Collected: 09/10/18 15:25
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.00		0.372	0.378	5.00	0.534	pCi/L		10/10/18 11:39	1

Client Sample ID: W-1D
Date Collected: 09/10/18 14:10
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.881		0.323	0.328	5.00	0.448	pCi/L		10/10/18 11:39	1

Client Sample ID: W-4EB
Date Collected: 09/10/18 15:35
Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.552		0.290	0.292	5.00	0.429	pCi/L		10/10/18 11:39	1

QC Sample Results

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

TestAmerica Job ID: 280-114168-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-345933/1-A
Matrix: Water
Analysis Batch: 346249

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 345933

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		09/18/18 15:00	09/19/18 12:55	1

Lab Sample ID: LCS 240-345933/2-A
Matrix: Water
Analysis Batch: 346249

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 345933

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.03		mg/L		103	80 - 120

Lab Sample ID: 280-114168-1 MS
Matrix: Water
Analysis Batch: 346249

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 345933

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.58		1.00	1.69		mg/L		111	75 - 125

Lab Sample ID: 280-114168-1 MSD
Matrix: Water
Analysis Batch: 346249

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 345933

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.58		1.00	1.64		mg/L		106	75 - 125	3	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-345933/1-A
Matrix: Water
Analysis Batch: 348697

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 345933

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		09/18/18 15:00	10/04/18 20:38	1
Arsenic	ND		0.0050	0.00075	mg/L		09/18/18 15:00	10/04/18 20:38	1
Barium	ND		0.0050	0.0022	mg/L		09/18/18 15:00	10/04/18 20:38	1
Beryllium	ND		0.0010	0.00031	mg/L		09/18/18 15:00	10/04/18 20:38	1
Cadmium	ND		0.0010	0.00021	mg/L		09/18/18 15:00	10/04/18 20:38	1
Cobalt	ND		0.0010	0.00019	mg/L		09/18/18 15:00	10/04/18 20:38	1
Chromium	ND		0.0020	0.00098	mg/L		09/18/18 15:00	10/04/18 20:38	1
Molybdenum	ND		0.010	0.0011	mg/L		09/18/18 15:00	10/04/18 20:38	1
Lead	ND		0.0010	0.00045	mg/L		09/18/18 15:00	10/04/18 20:38	1
Selenium	ND		0.0050	0.00089	mg/L		09/18/18 15:00	10/04/18 20:38	1
Thallium	ND		0.0010	0.00020	mg/L		09/18/18 15:00	10/04/18 20:38	1
Lithium	ND		0.0080	0.0017	mg/L		09/18/18 15:00	10/04/18 20:38	1
Calcium	ND		1.0	0.58	mg/L		09/18/18 15:00	10/04/18 20:38	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Lab Sample ID: LCS 240-345933/3-A

Matrix: Water

Analysis Batch: 348697

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 345933

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	0.100	0.0987		mg/L		99	80 - 120
Arsenic	1.00	0.949		mg/L		95	80 - 120
Barium	1.00	0.989		mg/L		99	80 - 120
Beryllium	1.00	0.948		mg/L		95	80 - 120
Cadmium	1.00	0.993		mg/L		99	80 - 120
Cobalt	1.00	0.925		mg/L		93	80 - 120
Chromium	1.00	0.967		mg/L		97	80 - 120
Molybdenum	0.100	0.0995		mg/L		99	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	0.961		mg/L		96	80 - 120
Thallium	0.250	0.247		mg/L		99	80 - 120
Lithium	0.100	0.0999		mg/L		100	80 - 120
Calcium	10.0	9.66		mg/L		97	80 - 120

Lab Sample ID: 280-114168-1 MS

Matrix: Water

Analysis Batch: 348697

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 345933

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND		0.100	0.103		mg/L		103	75 - 125
Arsenic	ND		1.00	0.969		mg/L		97	75 - 125
Barium	0.011		1.00	1.04		mg/L		103	75 - 125
Beryllium	0.00071	J	1.00	0.999		mg/L		100	75 - 125
Cadmium	0.00024	J	1.00	0.975		mg/L		98	75 - 125
Cobalt	0.00088	J	1.00	0.974		mg/L		97	75 - 125
Chromium	ND		1.00	0.975		mg/L		97	75 - 125
Molybdenum	0.0037	J	0.100	0.112		mg/L		109	75 - 125
Lead	ND		1.00	0.967		mg/L		97	75 - 125
Selenium	0.016		1.00	1.07		mg/L		105	75 - 125
Thallium	ND		0.250	0.238		mg/L		95	75 - 125
Lithium	0.28		0.100	0.371		mg/L		92	75 - 125
Calcium	340		10.0	343	4	mg/L		34	75 - 125

Lab Sample ID: 280-114168-1 MSD

Matrix: Water

Analysis Batch: 348697

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 345933

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	ND		0.100	0.103		mg/L		103	75 - 125	0	20
Arsenic	ND		1.00	0.986		mg/L		99	75 - 125	2	20
Barium	0.011		1.00	1.06		mg/L		104	75 - 125	1	20
Beryllium	0.00071	J	1.00	1.01		mg/L		101	75 - 125	1	20
Cadmium	0.00024	J	1.00	0.989		mg/L		99	75 - 125	1	20
Cobalt	0.00088	J	1.00	0.967		mg/L		97	75 - 125	1	20
Chromium	ND		1.00	0.982		mg/L		98	75 - 125	1	20
Molybdenum	0.0037	J	0.100	0.110		mg/L		106	75 - 125	2	20
Lead	ND		1.00	0.986		mg/L		99	75 - 125	2	20
Selenium	0.016		1.00	1.09		mg/L		107	75 - 125	2	20

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Lab Sample ID: 280-114168-1 MSD

Matrix: Water

Analysis Batch: 348697

Client Sample ID: W-1
Prep Type: Total Recoverable

Prep Batch: 345933

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Thallium	ND		0.250	0.241		mg/L		96	75 - 125	1	20
Lithium	0.28		0.100	0.367		mg/L		88	75 - 125	1	20
Calcium	340		10.0	349	4	mg/L		86	75 - 125	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-345936/1-A

Matrix: Water

Analysis Batch: 347280

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 345936

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		09/18/18 14:00	09/25/18 10:31	1

Lab Sample ID: LCS 240-345936/2-A

Matrix: Water

Analysis Batch: 347280

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 345936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.96		ug/L		99	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-429537/29

Matrix: Water

Analysis Batch: 429537

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 280-429537/4

Matrix: Water

Analysis Batch: 429537

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-430880/6

Matrix: Water

Analysis Batch: 430880

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			09/25/18 18:26	1
Fluoride	ND		0.50	0.060	mg/L			09/25/18 18:26	1
Sulfate	0.692	J	5.0	0.23	mg/L			09/25/18 18:26	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Lab Sample ID: LCS 280-430880/4

Matrix: Water

Analysis Batch: 430880

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.3		mg/L		99	90 - 110
Fluoride	5.00	5.14		mg/L		103	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-430880/5

Matrix: Water

Analysis Batch: 430880

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	99.3		mg/L		99	90 - 110	0	10
Fluoride	5.00	5.14		mg/L		103	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-430880/3

Matrix: Water

Analysis Batch: 430880

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.64	J	mg/L		106	50 - 150
Fluoride	0.200	0.192	J	mg/L		96	50 - 150
Sulfate	2.50	2.95	J	mg/L		118	50 - 150

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

Lab Sample ID: MB 280-429451/1

Matrix: Water

Analysis Batch: 429451

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)	7.00	J	10	4.7	mg/L			09/12/18 19:49	1

Lab Sample ID: LCS 280-429451/2

Matrix: Water

Analysis Batch: 429451

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: 280-114168-1 DU

Matrix: Water

Analysis Batch: 429451

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4500	B	4460		mg/L		2	10

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Lab Sample ID: MB 280-430673/1
Matrix: Water
Analysis Batch: 430673

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			09/24/18 08:04	1

Lab Sample ID: LCS 280-430673/2
Matrix: Water
Analysis Batch: 430673

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

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

Lab Sample ID: 280-114168-6 DU
Matrix: Water
Analysis Batch: 430673

Client Sample ID: W-4EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	ND	H	ND		mg/L		NC	10

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

Lab Sample ID: MB 280-429298/1
Matrix: Water
Analysis Batch: 429298

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			09/11/18 18:17	1

Lab Sample ID: LCS 280-429298/2
Matrix: Water
Analysis Batch: 429298

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	92.4		mg/L		92	86 - 114

Lab Sample ID: LCSD 280-429298/3
Matrix: Water
Analysis Batch: 429298

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	96.4		mg/L		96	86 - 114	4	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-389670/22-A
Matrix: Water
Analysis Batch: 393784

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389670

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2649		0.106	0.108	1.00	0.106	pCi/L	09/17/18 08:49	10/09/18 04:50	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-114168-1

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

Lab Sample ID: MB 160-389670/22-A

Matrix: Water

Analysis Batch: 393784

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389670

Carrier	MB %Yield	MB Qualifier	Limits
Ba Carrier	109		40 - 110

Prepared	Analyzed	Dil Fac
09/17/18 08:49	10/09/18 04:50	1

Lab Sample ID: LCS 160-389670/1-A

Matrix: Water

Analysis Batch: 393786

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389670

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	15.1	13.87		1.42	1.00	0.0920	pCi/L	92	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	104		40 - 110						

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-389674/22-A

Matrix: Water

Analysis Batch: 391132

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389674

			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.2427	U	0.239	0.240	1.00	0.476	pCi/L	09/17/18 09:36	09/24/18 16:40	1
Carrier	MB	MB								
	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110					09/17/18 09:36	09/24/18 16:40	1
Y Carrier	80.0		40 - 110					09/17/18 09:36	09/24/18 16:40	1

Lab Sample ID: LCS 160-389674/1-A

Matrix: Water

Analysis Batch: 391132

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389674

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	14.6	16.07		1.78	1.00	0.511	pCi/L	110	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	104		40 - 110						
Y Carrier	78.5		40 - 110						

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-114168-1

Metals

Prep Batch: 345933

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total Recoverable	Water	3005A	
280-114168-2	W-2	Total Recoverable	Water	3005A	
280-114168-3	W-3	Total Recoverable	Water	3005A	
280-114168-4	W-4	Total Recoverable	Water	3005A	
280-114168-5	W-1D	Total Recoverable	Water	3005A	
280-114168-6	W-4EB	Total Recoverable	Water	3005A	
MB 240-345933/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-345933/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-345933/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-114168-1 MS	W-1	Total Recoverable	Water	3005A	
280-114168-1 MS	W-1	Total Recoverable	Water	3005A	
280-114168-1 MSD	W-1	Total Recoverable	Water	3005A	
280-114168-1 MSD	W-1	Total Recoverable	Water	3005A	

Prep Batch: 345936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	7470A	
280-114168-2	W-2	Total/NA	Water	7470A	
280-114168-3	W-3	Total/NA	Water	7470A	
280-114168-4	W-4	Total/NA	Water	7470A	
280-114168-5	W-1D	Total/NA	Water	7470A	
280-114168-6	W-4EB	Total/NA	Water	7470A	
MB 240-345936/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-345936/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 346249

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total Recoverable	Water	6010C	345933
280-114168-2	W-2	Total Recoverable	Water	6010C	345933
280-114168-3	W-3	Total Recoverable	Water	6010C	345933
280-114168-4	W-4	Total Recoverable	Water	6010C	345933
280-114168-5	W-1D	Total Recoverable	Water	6010C	345933
280-114168-6	W-4EB	Total Recoverable	Water	6010C	345933
MB 240-345933/1-A	Method Blank	Total Recoverable	Water	6010C	345933
LCS 240-345933/2-A	Lab Control Sample	Total Recoverable	Water	6010C	345933
280-114168-1 MS	W-1	Total Recoverable	Water	6010C	345933
280-114168-1 MSD	W-1	Total Recoverable	Water	6010C	345933

Analysis Batch: 347280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	7470A	345936
280-114168-2	W-2	Total/NA	Water	7470A	345936
280-114168-3	W-3	Total/NA	Water	7470A	345936
280-114168-4	W-4	Total/NA	Water	7470A	345936
280-114168-5	W-1D	Total/NA	Water	7470A	345936
280-114168-6	W-4EB	Total/NA	Water	7470A	345936
MB 240-345936/1-A	Method Blank	Total/NA	Water	7470A	345936
LCS 240-345936/2-A	Lab Control Sample	Total/NA	Water	7470A	345936

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-114168-1

Metals (Continued)

Analysis Batch: 348697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total Recoverable	Water	6020A	345933
280-114168-2	W-2	Total Recoverable	Water	6020A	345933
280-114168-3	W-3	Total Recoverable	Water	6020A	345933
280-114168-4	W-4	Total Recoverable	Water	6020A	345933
280-114168-5	W-1D	Total Recoverable	Water	6020A	345933
280-114168-6	W-4EB	Total Recoverable	Water	6020A	345933
MB 240-345933/1-A	Method Blank	Total Recoverable	Water	6020A	345933
LCS 240-345933/3-A	Lab Control Sample	Total Recoverable	Water	6020A	345933
280-114168-1 MS	W-1	Total Recoverable	Water	6020A	345933
280-114168-1 MSD	W-1	Total Recoverable	Water	6020A	345933

General Chemistry

Analysis Batch: 429298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	SM 2540D	
280-114168-2	W-2	Total/NA	Water	SM 2540D	
280-114168-3	W-3	Total/NA	Water	SM 2540D	
280-114168-4	W-4	Total/NA	Water	SM 2540D	
280-114168-5	W-1D	Total/NA	Water	SM 2540D	
280-114168-6	W-4EB	Total/NA	Water	SM 2540D	
MB 280-429298/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-429298/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-429298/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 429451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	SM 2540C	
280-114168-2	W-2	Total/NA	Water	SM 2540C	
280-114168-3	W-3	Total/NA	Water	SM 2540C	
280-114168-4	W-4	Total/NA	Water	SM 2540C	
280-114168-5	W-1D	Total/NA	Water	SM 2540C	
MB 280-429451/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-429451/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-114168-1 DU	W-1	Total/NA	Water	SM 2540C	

Analysis Batch: 429537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	9040B	
280-114168-2	W-2	Total/NA	Water	9040B	
280-114168-3	W-3	Total/NA	Water	9040B	
280-114168-4	W-4	Total/NA	Water	9040B	
280-114168-5	W-1D	Total/NA	Water	9040B	
LCS 280-429537/29	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-429537/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 429847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-6	W-4EB	Total/NA	Water	9040B	
LCS 280-429847/29	Lab Control Sample	Total/NA	Water	9040B	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-114168-1

General Chemistry (Continued)

Analysis Batch: 430673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-6	W-4EB	Total/NA	Water	SM 2540C	
MB 280-430673/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-430673/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-114168-6 DU	W-4EB	Total/NA	Water	SM 2540C	

Analysis Batch: 430880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	9056A	
280-114168-1	W-1	Total/NA	Water	9056A	
280-114168-2	W-2	Total/NA	Water	9056A	
280-114168-2	W-2	Total/NA	Water	9056A	
280-114168-3	W-3	Total/NA	Water	9056A	
280-114168-3	W-3	Total/NA	Water	9056A	
280-114168-4	W-4	Total/NA	Water	9056A	
280-114168-4	W-4	Total/NA	Water	9056A	
280-114168-5	W-1D	Total/NA	Water	9056A	
280-114168-5	W-1D	Total/NA	Water	9056A	
280-114168-6	W-4EB	Total/NA	Water	9056A	
MB 280-430880/6	Method Blank	Total/NA	Water	9056A	
LCS 280-430880/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-430880/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-430880/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 389670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	PrecSep-21	
280-114168-2	W-2	Total/NA	Water	PrecSep-21	
280-114168-3	W-3	Total/NA	Water	PrecSep-21	
280-114168-4	W-4	Total/NA	Water	PrecSep-21	
280-114168-5	W-1D	Total/NA	Water	PrecSep-21	
280-114168-6	W-4EB	Total/NA	Water	PrecSep-21	
MB 160-389670/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-389670/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 389674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114168-1	W-1	Total/NA	Water	PrecSep_0	
280-114168-2	W-2	Total/NA	Water	PrecSep_0	
280-114168-3	W-3	Total/NA	Water	PrecSep_0	
280-114168-4	W-4	Total/NA	Water	PrecSep_0	
280-114168-5	W-1D	Total/NA	Water	PrecSep_0	
280-114168-6	W-4EB	Total/NA	Water	PrecSep_0	
MB 160-389674/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-389674/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-1

Date Collected: 09/10/18 14:10

Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-1

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	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 13:03	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348697	10/04/18 20:46	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	345936	09/18/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			347280	09/25/18 10:34	AJC	TAL CAN
Total/NA	Analysis	9040B		1			429537	09/12/18 22:22	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	430880	09/26/18 08:50	ARM	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	430880	09/26/18 09:08	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	429451	09/12/18 19:49	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429298	09/11/18 18:17	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			749.70 mL	1.0 g	389670	09/17/18 08:49	JLC	TAL SL
Total/NA	Analysis	9315		1			393785	10/09/18 04:45	CDR	TAL SL
Total/NA	Prep	PrecSep_0			749.70 mL	1.0 g	389674	09/17/18 09:36	JLC	TAL SL
Total/NA	Analysis	9320		1			391132	09/24/18 16:40	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			394198	10/10/18 11:39	ALS	TAL SL

Client Sample ID: W-2

Date Collected: 09/10/18 16:50

Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-2

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	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 13:33	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348697	10/04/18 20:56	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	345936	09/18/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			347280	09/25/18 10:37	AJC	TAL CAN
Total/NA	Analysis	9040B		1			429537	09/12/18 22:46	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	430880	09/26/18 09:27	ARM	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	430880	09/26/18 10:25	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	429451	09/12/18 19:49	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429298	09/11/18 18:17	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.17 mL	1.0 g	389670	09/17/18 08:49	JLC	TAL SL
Total/NA	Analysis	9315		1			393785	10/09/18 04:46	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.17 mL	1.0 g	389674	09/17/18 09:36	JLC	TAL SL
Total/NA	Analysis	9320		1			391132	09/24/18 16:40	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			394198	10/10/18 11:39	ALS	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-3

Date Collected: 09/10/18 18:00

Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-3

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	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 13:38	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348697	10/04/18 20:59	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	345936	09/18/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			347280	09/25/18 10:39	AJC	TAL CAN
Total/NA	Analysis	9040B		1			429537	09/12/18 22:51	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	430880	09/26/18 10:44	ARM	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	430880	09/26/18 11:03	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	429451	09/12/18 19:49	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429298	09/11/18 18:17	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.28 mL	1.0 g	389670	09/17/18 08:49	JLC	TAL SL
Total/NA	Analysis	9315		1			393785	10/09/18 04:46	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.28 mL	1.0 g	389674	09/17/18 09:36	JLC	TAL SL
Total/NA	Analysis	9320		1			391132	09/24/18 16:40	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			394198	10/10/18 11:39	ALS	TAL SL

Client Sample ID: W-4

Date Collected: 09/10/18 15:25

Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-4

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	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 13:43	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348697	10/04/18 21:01	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	345936	09/18/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			347280	09/25/18 10:41	AJC	TAL CAN
Total/NA	Analysis	9040B		1			429537	09/12/18 22:37	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	430880	09/26/18 11:21	ARM	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	430880	09/26/18 11:40	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	429451	09/12/18 19:49	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429298	09/11/18 18:17	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.39 mL	1.0 g	389670	09/17/18 08:49	JLC	TAL SL
Total/NA	Analysis	9315		1			393785	10/09/18 04:46	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.39 mL	1.0 g	389674	09/17/18 09:36	JLC	TAL SL
Total/NA	Analysis	9320		1			391132	09/24/18 16:40	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			394198	10/10/18 11:39	ALS	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-114168-1

Client Sample ID: W-1D

Date Collected: 09/10/18 14:10

Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-5

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	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 13:47	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348697	10/04/18 21:03	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	345936	09/18/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			347280	09/25/18 10:43	AJC	TAL CAN
Total/NA	Analysis	9040B		1			429537	09/12/18 21:16	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	430880	09/26/18 11:59	ARM	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	430880	09/26/18 12:18	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	429451	09/12/18 19:49	ARM	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429298	09/11/18 18:17	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			749.84 mL	1.0 g	389670	09/17/18 08:49	JLC	TAL SL
Total/NA	Analysis	9315		1			393785	10/09/18 04:46	CDR	TAL SL
Total/NA	Prep	PrecSep_0			749.84 mL	1.0 g	389674	09/17/18 09:36	JLC	TAL SL
Total/NA	Analysis	9320		1			391132	09/24/18 16:40	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			394198	10/10/18 11:39	ALS	TAL SL

Client Sample ID: W-4EB

Date Collected: 09/10/18 15:35

Date Received: 09/11/18 12:55

Lab Sample ID: 280-114168-6

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	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			346249	09/19/18 13:52	KLC	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	345933	09/18/18 15:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			348697	10/04/18 21:10	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	345936	09/18/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			347280	09/25/18 10:44	AJC	TAL CAN
Total/NA	Analysis	9040B		1			429847	09/14/18 20:07	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	430880	09/26/18 12:53	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	430673	09/24/18 08:04	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	429298	09/11/18 18:17	BJP	TAL DEN
Total/NA	Prep	PrecSep-21			750.14 mL	1.0 g	389670	09/17/18 08:49	JLC	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	393784	10/09/18 04:49	CDR	TAL SL
Total/NA	Prep	PrecSep_0			750.14 mL	1.0 g	389674	09/17/18 09:36	JLC	TAL SL
Total/NA	Analysis	9320		1			391132	09/24/18 16:40	MAR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			394198	10/10/18 11:39	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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-114168-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-114168-1

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
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	10-31-18 *

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

TestAmerica Denver

TestAmerica Denver
4965 Yarrow Street
Arvada, CO 80002
Phone (303) 735-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
The Laboratory Division, Inc. 103345

Client Information
Client Contact: Anna Lundin
Company: HDR Inc.
Address: 9781 S. Meridian Blvd Suite 400
City: Englewood
State: CO 80112
Phone: 734-263-7138 (Tel)
Email: anna.lundin@hdrinc.com
Project Name: K&E Energy GW CCR Monitoring - Hayden
Site: Colorado
SSOW#: 550W#

Sample: Tare Kent
Phone: 720-933-7496
Lab #1: Ref: Stephanie K
E-Mail: stephanie.rolfmeier@testamericainc.com

Due Date Requested:
Analysis Requested:
COC No.: 290-77523-25480.1
Page: 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Water, Solid, Gas, etc.)	Field Filtered Sample (Yes or No)	Perform MS/SSD (Yes or No)	2546C - Total Dissolved Solids (TDS)	6010C, 6020A, 7470A	metals	9049B, 9056A, 28D	pH	2546D - Total Suspended Solids	9315, Ra226, 9320, Ra228	Total Number of containers	Special Instructions/Notes
W-1	9-10-18	1410	G	Water											
W-2	9-10-18	1650	G	Water											
W-3	9-10-18	1800	G	Water											
W-4	9-10-18	1525	G	Water											
Field Duplicate W-1-D	9-10-18	1410	G	Water											
Equipment Blank W-4EB	9-10-18	1535	G	Water											
Possible Hazard Identification ☒ Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV Other (specify): Empty Kit Relinquished by: Tare Kent Date: 9-11-18 Time: 12:53 Relinquished by: Tare Kent Date: 9-11-18 Company: HDR Relinquished by: Tare Kent Date: 9-11-18 Company: HDR Relinquished by: Tare Kent Date: 9-11-18 Company: HDR Custody Seal Intact: A Yes A No Custody Seal No: 3.8 4.4 8 to 5 by AP 9/11/18															



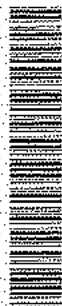
280-114168 Chain of Custody

THE UNIVERSITY OF CHICAGO

10/11/2018

2.6/3.5

Chain of Custody Record



Client Information (Sub Contract Lab) Company: TestAmerica Laboratories, Inc. Address: 4101 Shofel Street NW City: North Canton State: OH Zip: 44720 Phone: 330-487-9398 (Tel) 330-487-0772 (Fax) Email: Project Name: Xcel Energy GW CCR Monitoring - Hayden Site: Xcel Energy CCR - Hayden Station		Sampler: [Blank] Lab: [Blank] Rollmeyer, Stephanie K E-Mail: stephanie.rollmeyer@testamericainc.com Address: [Blank] City: [Blank] State: [Blank] Zip: [Blank]		COC No: 280-454262-1 Page: Page 1 of 1 Job #: 280-114168-1	
Analysis Requested Due Date Requested: 10/3/2018 TAT Requested (days): PO #: W/O #: Project #: 28014377 380149#		Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - Nitric Acid F - MeOH G - Acetone H - Ascorbic Acid I - 10% J - DI Water K - EDTA L - EDA Other: M - HNO ₃ N - None O - As ₂ O ₃ P - Na ₂ SO ₄ Q - Na ₂ SO ₃ R - Na ₂ SO ₄ S - Na ₂ SO ₃ T - TSP Dodecahydrate U - Acetone V - MeOH W - pH 4.5 X - EDTA Y - EDA Z - other (specify)			
Sample Identification - Client ID (Lab ID) W-1 (280-114168-1) W-2 (280-114168-2) W-3 (280-114168-3) W-4 (280-114168-4) W-1D (280-114168-5) W-4EB (280-114168-6)		Field Flashed Sample (Yes or No) 602A/300A (MDO) 12 Total Metals (Inclusion Cell) 602A/300A (MDO) Boron 7420A/7470A, Prop Mercury			
Sample Date 9/10/18 9/10/18 9/10/18 9/10/18 9/10/18 9/10/18		Sample Time 14:10 16:50 18:00 15:25 14:10 15:35		Matrix (W=Water, S=Soil, O=Other) Water Water Water Water Water Water	
Sample Type (C=Composite, G=Grab) C C C C C C		Preservation Code [Blank] [Blank] [Blank] [Blank] [Blank] [Blank]		Special Instructions/Note: 5-41 Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell	
Total Number of Containers: [Blank]					
Special Instructions/Note: [Blank]					

Notes: Since laboratory accreditation is required for all samples, this sample should be forwarded under chain of custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis, the laboratory will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditation are current in date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification Unconfirmed Deliverable Requested I, II, III, IV, Other (specify): Primary Deliverable Rank: 4 Empty Kit Requisitioned by: [Blank]		Title: [Blank] Date: [Blank]	
Issued/Received by: [Signature] Date/Time: 9-12-18 16:35 Relinquished by: [Signature] Date/Time: [Blank]		Company: TAC Date/Time: 9-13-18 Date/Time: [Blank]	
Relinquished by: [Signature] Date/Time: [Blank]		Company: [Blank] Date/Time: [Blank]	
Custody Seals Intact: Yes [X] No [] Custom Seal No: [Blank]		Cooler Temperature (°C and Other Remarks): [Blank]	

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client TA DENVER Site Name _____ Cooler unpacked by: POF
 Cooler Received on 9-13-18 Opened on 9-14-18

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

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

TestAmerica Cooler # TA Foam Box _____ Client Cooler _____ Box _____ Other _____
 Packing material used: Bubble Wrap _____ Foam Plastic Bag _____ None _____ Other _____
 COOLANT: Veri Ice Blue Ice _____ Dry Ice _____ Water _____ None _____

1. Cooler temperature upon receipt: ☐ See Multiple Cooler Form
 IR GUN# 1R-8 (CF +0.9 °C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 3.5 °C
 IR GUN #36 (CF +0.6 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes Yes No _____
 -Were the seals on the outside of the cooler(s) signed & dated? Yes Yes No NA _____
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes Yes No NA _____
 -Were tamper/custody seals intact and uncompromised? Yes Yes No NA _____

3. Shippers' packing slip attached to the cooler(s)? Yes Yes No _____

4. Did custody papers accompany the sample(s)? Yes Yes No _____

5. Were the custody papers relinquished & signed in the appropriate place? Yes Yes No _____

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes Yes No _____

7. Did all bottles arrive in good condition (Unbroken)? Yes Yes No _____

8. Could all bottle labels be reconciled with the COC? Yes Yes No _____

9. Were correct bottle(s) used for the test(s) indicated? Yes Yes No _____

10. Sufficient quantity received to perform indicated analyses? Yes Yes No _____

11. Are these work share samples? Yes Yes No _____

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC849161

13. Were VOAs on the COC? Yes Yes No _____

14. Were air bubbles >6 mm in any VOA vials? Yes Larger than this Yes No NA _____

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No _____

16. Was a LL Hg or Me Hg trip blank present? Yes No _____

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

Concerning _____

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

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: 280-114168-1

Login Number: 114168

List Number: 1

Creator: Paul, Amanda E

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-114168-1

Login Number: 114168

List Number: 2

Creator: Hellm, Michael

List Source: TestAmerica St. Louis

List Creation: 09/13/18 01:07 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-114168-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-114168-1	W-1	109	
280-114168-2	W-2	108	
280-114168-3	W-3	117 X	
280-114168-4	W-4	111 X	
280-114168-5	W-1D	106	
280-114168-6	W-4EB	110	
LCS 160-389670/1-A	Lab Control Sample	104	
MB 160-389670/22-A	Method Blank	109	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-114168-1	W-1	109	82.6
280-114168-2	W-2	108	82.6
280-114168-3	W-3	117 X	81.9
280-114168-4	W-4	111 X	82.6
280-114168-5	W-1D	106	83.4
280-114168-6	W-4EB	110	83.4
LCS 160-389674/1-A	Lab Control Sample	104	78.5
MB 160-389674/22-A	Method Blank	109	80.0
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-115507-1

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

For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:

11/20/2018 10:29:31 PM

Darlene Bandy, Project Manager I

(303)736-0188

darlene.bandy@testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-115507-1

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.
F1	MS and/or MSD Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

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

Rad

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

Glossary

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

Case Narrative

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

TestAmerica Job ID: 280-115507-1

Job ID: 280-115507-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-115507-1

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

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

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

RECEIPT

The samples were received on 10/12/2018 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.3° C and 5.8° C.

TOTAL RECOVERABLE METALS

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/17/2018 and analyzed on 10/18/2018.

Samples MW-6 (280-115507-6)[5X] and MW-7 (280-115507-7)[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.

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/17/2018 and analyzed on 10/19/2018, 10/23/2018 and 10/24/2018.

Calcium failed the recovery criteria low for the MS/MSD of sample W-1 (280-115507-1) in batch 240-351121. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount; therefore, control limits are not applicable. Lithium failed the recovery criteria low for the MSD of sample W-1 (280-115507-1) in batch 240-351620. Refer to the QC report for details. The acceptable LCS data indicate that the analytical system was operating within control.

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

TOTAL MERCURY

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 10/17/2018 and analyzed on 10/18/2018.

Case Narrative

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

TestAmerica Job ID: 280-115507-1

Job ID: 280-115507-1 (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 W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 10/16/2018 and 10/18/2018.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 10/16/2018 and 10/17/2018.

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

CORROSIVITY (PH)

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 10/17/2018.

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

ANIONS (28 DAYS)

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4), W-4D (280-115507-5), MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/27/2018, 10/28/2018, 10/30/2018 and 10/31/2018.

Samples W-1 (280-115507-1)[2X], W-1 (280-115507-1)[20X], W-2 (280-115507-2)[2X], W-2 (280-115507-2)[50X], W-3 (280-115507-3)[100X], W-3 (280-115507-3)[5X], W-4 (280-115507-4)[100X], W-4 (280-115507-4)[5X], W-4D (280-115507-5)[100X], W-4D (280-115507-5)[5X], MW-6 (280-115507-6)[2X], MW-6 (280-115507-6)[50X], MW-7 (280-115507-7)[2X], MW-7 (280-115507-7)[50X], MW-8 (280-115507-8)[5X] and MW-8 (280-115507-8)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Chloride and Sulfate were detected in method blank MB 280-435513/13 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.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount; therefore, control limits are not applicable. Refer to the QC report for details.

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

RADIUM-226 (GFPC)

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4) and W-4D (280-115507-5) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 10/18/2018 and analyzed on 11/09/2018.

Radium-226 was detected in method blank MB 160-395714/19-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate. Refer to the QC report for details.

The following samples were prepared at a reduced aliquot due to limited sample volume: W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4) and W-4D (280-115507-5)

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

RADIUM-228

Case Narrative

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

TestAmerica Job ID: 280-115507-1

Job ID: 280-115507-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4) and W-4D (280-115507-5) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 10/18/2018 and analyzed on 11/07/2018.

The following samples were prepared at a reduced aliquot due to limited sample volume: W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4) and W-4D (280-115507-5)

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

RADIUM-226/RADIUM-228 (GFPC)

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4) and W-4D (280-115507-5) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 11/15/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: W-1

Lab Sample ID: 280-115507-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.58		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0099		0.0050	0.0022	mg/L	1		6020A	Recoverable
Beryllium	0.00095	J	0.0010	0.00031	mg/L	1		6020A	Total
Calcium	320		1.0	0.58	mg/L	1		6020A	Recoverable
Cadmium	0.00036	J	0.0010	0.00021	mg/L	1		6020A	Total
Cobalt	0.00094	J	0.0010	0.00019	mg/L	1		6020A	Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total
Selenium	0.010		0.0050	0.00089	mg/L	1		6020A	Recoverable
Lithium	0.29	F1	0.0080	0.0017	mg/L	1		6020A	Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Recoverable
Temperature	20.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	41		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.29	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	2700	B	100	4.6	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	1300		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-115507-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.2		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0051		0.0050	0.0022	mg/L	1		6020A	Recoverable
Beryllium	0.00092	J	0.0010	0.00031	mg/L	1		6020A	Total
Calcium	300		1.0	0.58	mg/L	1		6020A	Recoverable
Cadmium	0.00028	J	0.0010	0.00021	mg/L	1		6020A	Total
Cobalt	0.0014		0.0010	0.00019	mg/L	1		6020A	Recoverable
Molybdenum	0.0031	J	0.010	0.0011	mg/L	1		6020A	Total
Selenium	0.0030	J	0.0050	0.00089	mg/L	1		6020A	Recoverable
Lithium	0.64		0.0080	0.0017	mg/L	1		6020A	Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Recoverable
Temperature	22.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	83		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.50	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4500	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4100		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: W-3

Lab Sample ID: 280-115507-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.70		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0065		0.0050	0.0022	mg/L	1			6020A	Recoverable
Calcium	330		1.0	0.58	mg/L	1			6020A	Total
Cadmium	0.00037	J	0.0010	0.00021	mg/L	1			6020A	Recoverable
Cobalt	0.0023		0.0010	0.00019	mg/L	1			6020A	Total
Molybdenum	0.0030	J	0.010	0.0011	mg/L	1			6020A	Recoverable
Selenium	0.011		0.0050	0.00089	mg/L	1			6020A	Total
Lithium	1.2		0.0080	0.0017	mg/L	1			6020A	Recoverable
pH adj. to 25 deg C	7.5	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	190		15	1.3	mg/L	5			9056A	Total/NA
Fluoride	0.56	J	2.5	0.30	mg/L	5			9056A	Total/NA
Sulfate	7800	B	500	23	mg/L	100			9056A	Total/NA
Total Dissolved Solids (TDS)	17000		100	47	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	5.2		4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-115507-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.64		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0074		0.0050	0.0022	mg/L	1			6020A	Recoverable
Calcium	300		1.0	0.58	mg/L	1			6020A	Total
Cadmium	0.00022	J	0.0010	0.00021	mg/L	1			6020A	Recoverable
Cobalt	0.0064		0.0010	0.00019	mg/L	1			6020A	Total
Molybdenum	0.0029	J	0.010	0.0011	mg/L	1			6020A	Recoverable
Selenium	0.0019	J	0.0050	0.00089	mg/L	1			6020A	Total
Lithium	0.69		0.0080	0.0017	mg/L	1			6020A	Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	21.2	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	360		15	1.3	mg/L	5			9056A	Total/NA
Fluoride	0.50	J	2.5	0.30	mg/L	5			9056A	Total/NA
Sulfate	13000	B	500	23	mg/L	100			9056A	Total/NA
Total Dissolved Solids (TDS)	11000		100	47	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	7.2		4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: W-4D

Lab Sample ID: 280-115507-5

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: W-4D (Continued)

Lab Sample ID: 280-115507-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.75		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0086		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	180		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00024	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0074		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Lithium	0.75		0.0080	0.0017	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	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	370		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.49	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	13000	B	500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	19000		100	47	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-6

Lab Sample ID: 280-115507-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	45		0.50	0.12	mg/L	5		6010C	Total Recoverable
Barium	0.0054		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	370		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00040	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Molybdenum	1.5		0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	68		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.32	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4700		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-115507-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	47		0.50	0.12	mg/L	5		6010C	Total Recoverable
Barium	0.0051		0.0050	0.0022	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 - Hayden

TestAmerica Job ID: 280-115507-1

Client Sample ID: MW-7 (Continued)

Lab Sample ID: 280-115507-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Calcium	390		1.0	0.58	mg/L	1			6020A	Total Recoverable
Molybdenum	0.92		0.010	0.0011	mg/L	1			6020A	Total Recoverable
Selenium	0.0070		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
Lithium	0.31		0.0080	0.0017	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	22.2	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	140		6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.16	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	3100	B	250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	5200		40	19	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-115507-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1			6010C	Total Recoverable
Barium	0.0054		0.0050	0.0022	mg/L	1			6020A	Total Recoverable
Calcium	450		1.0	0.58	mg/L	1			6020A	Total Recoverable
Cobalt	0.00029	J	0.0010	0.00019	mg/L	1			6020A	Total Recoverable
Selenium	0.040		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
Lithium	0.74		0.0080	0.0017	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	21.7	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	230		15	1.3	mg/L	5			9056A	Total/NA
Sulfate	5400	B	250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	3.6	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: MW-8EB

Lab Sample ID: 280-115507-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.064	J	0.10	0.023	mg/L	1			6010C	Total Recoverable
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	22.0	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Sulfate	0.27	J	5.0	0.23	mg/L	1			9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-115507-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-115507-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115507-1	W-1	Water	10/10/18 15:10	10/12/18 14:15
280-115507-2	W-2	Water	10/10/18 14:10	10/12/18 14:15
280-115507-3	W-3	Water	10/10/18 16:25	10/12/18 14:15
280-115507-4	W-4	Water	10/10/18 13:00	10/12/18 14:15
280-115507-5	W-4D	Water	10/10/18 13:00	10/12/18 14:15
280-115507-6	MW-6	Water	10/11/18 10:30	10/12/18 14:15
280-115507-7	MW-7	Water	10/11/18 09:35	10/12/18 14:15
280-115507-8	MW-8	Water	10/11/18 12:20	10/12/18 14:15
280-115507-9	MW-8EB	Water	10/11/18 12:40	10/12/18 14:15

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.58		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 12:12	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.2		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 12:43	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.70		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 12:47	1

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.64		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 12:52	1

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.75		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 12:56	1

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	45		0.50	0.12	mg/L	—	10/17/18 14:00	10/18/18 13:54	5

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	47		0.50	0.12	mg/L	—	10/17/18 14:00	10/18/18 13:59	5

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 13:10	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.064	J	0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 13:23	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:31	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:31	1
Barium	0.0099		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:31	1
Beryllium	0.00095	J	0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 15:42	1
Calcium	320		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:31	1
Cadmium	0.00036	J	0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:31	1
Cobalt	0.00094	J	0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:31	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:31	1
Molybdenum	0.0035	J	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:31	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:31	1
Selenium	0.010		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:31	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:31	1
Lithium	0.29	F1	0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 15:42	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:41	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:41	1
Barium	0.0051		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:41	1
Beryllium	0.00092	J	0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 15:59	1
Calcium	300		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:41	1
Cadmium	0.00028	J	0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:41	1
Cobalt	0.0014		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:41	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:41	1
Molybdenum	0.0031	J	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:41	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:41	1
Selenium	0.0030	J	0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:41	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:41	1
Lithium	0.64		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 15:59	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:44	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:44	1
Barium	0.0065		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:44	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 16:01	1
Calcium	330		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:44	1
Cadmium	0.00037	J	0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:44	1
Cobalt	0.0023		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:44	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:44	1
Molybdenum	0.0030	J	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:44	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:44	1
Selenium	0.011		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:44	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:44	1
Lithium	1.2		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 16:01	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:46	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:46	1
Barium	0.0074		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:46	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 16:03	1
Calcium	300		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:46	1
Cadmium	0.00022	J	0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:46	1
Cobalt	0.0064		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:46	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:46	1
Molybdenum	0.0029	J	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:46	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:46	1
Selenium	0.0019	J	0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:46	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:46	1
Lithium	0.69		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 16:03	1

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:53	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:53	1
Barium	0.0086		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:53	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 16:06	1
Calcium	180		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:53	1
Cadmium	0.00024	J	0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:53	1
Cobalt	0.0074		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:53	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:53	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:53	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:53	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:53	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:53	1
Lithium	0.75		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 16:06	1

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:55	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:55	1
Barium	0.0054		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:55	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 16:08	1
Calcium	370		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:55	1
Cadmium	0.00040	J	0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:55	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:55	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:55	1
Molybdenum	1.5		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:55	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:55	1
Selenium	0.012		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:55	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:55	1
Lithium	0.11		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 16:08	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:02	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:02	1
Barium	0.0051		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:02	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 16:10	1
Calcium	390		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 17:02	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:02	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:02	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:02	1
Molybdenum	0.92		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:02	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:02	1
Selenium	0.0070		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:02	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:02	1
Lithium	0.31		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 16:10	1

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:04	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:04	1
Barium	0.0054		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:04	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/24/18 14:17	1
Calcium	450		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 17:04	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:04	1
Cobalt	0.00029	J	0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:04	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:04	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:04	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:04	1
Selenium	0.040		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:04	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:04	1
Lithium	0.74		0.0080	0.0017	mg/L		10/17/18 14:00	10/24/18 14:17	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 17:06	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 17:06	1
Barium	ND		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 17:06	1
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/24/18 14:19	1
Calcium	ND		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 17:06	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 17:06	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 17:06	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 17:06	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 17:06	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 17:06	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 17:06	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 17:06	1
Lithium	ND		0.0080	0.0017	mg/L		10/17/18 14:00	10/24/18 14:19	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:01	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:03	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:16	1

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:18	1

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:20	1

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:22	1

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:24	1

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:26	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/17/18 14:00	10/18/18 10:28	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

General Chemistry

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
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			10/17/18 14:30	1
Temperature	20.7	HF	1.0	1.0	Degrees C			10/17/18 14:30	1
Chloride	41		6.0	0.51	mg/L			10/27/18 18:42	2
Fluoride	0.29	J	1.0	0.12	mg/L			10/27/18 18:42	2
Sulfate	2700	B	100	4.6	mg/L			10/30/18 21:05	20
Total Dissolved Solids (TDS)	1300		40	19	mg/L			10/16/18 15:30	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			10/16/18 13:04	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
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			10/17/18 14:45	1
Temperature	22.2	HF	1.0	1.0	Degrees C			10/17/18 14:45	1
Chloride	83		6.0	0.51	mg/L			10/27/18 19:19	2
Fluoride	0.50	J	1.0	0.12	mg/L			10/27/18 19:19	2
Sulfate	4500	B	250	12	mg/L			10/31/18 03:29	50
Total Dissolved Solids (TDS)	4100		40	19	mg/L			10/16/18 15:30	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			10/16/18 13:04	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
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			10/17/18 14:58	1
Temperature	21.2	HF	1.0	1.0	Degrees C			10/17/18 14:58	1
Chloride	190		15	1.3	mg/L			10/27/18 20:34	5
Fluoride	0.56	J	2.5	0.30	mg/L			10/27/18 20:34	5
Sulfate	7800	B	500	23	mg/L			10/31/18 04:39	100
Total Dissolved Solids (TDS)	17000		100	47	mg/L			10/16/18 15:30	1
Total Suspended Solids	5.2		4.0	1.1	mg/L			10/16/18 13:04	1

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			10/17/18 15:03	1
Temperature	21.2	HF	1.0	1.0	Degrees C			10/17/18 15:03	1
Chloride	360		15	1.3	mg/L			10/27/18 21:12	5
Fluoride	0.50	J	2.5	0.30	mg/L			10/27/18 21:12	5
Sulfate	13000	B	500	23	mg/L			10/31/18 04:57	100
Total Dissolved Solids (TDS)	11000		100	47	mg/L			10/16/18 15:30	1
Total Suspended Solids	7.2		4.0	1.1	mg/L			10/16/18 13:04	1

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
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			10/17/18 14:49	1
Temperature	21.6	HF	1.0	1.0	Degrees C			10/17/18 14:49	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

General Chemistry (Continued)

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	370		15	1.3	mg/L			10/27/18 21:49	5
Fluoride	0.49	J	2.5	0.30	mg/L			10/27/18 21:49	5
Sulfate	13000	B	500	23	mg/L			10/31/18 05:14	100
Total Dissolved Solids (TDS)	19000		100	47	mg/L			10/16/18 15:30	1
Total Suspended Solids	28		4.0	1.1	mg/L			10/16/18 13:04	1

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
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			10/17/18 14:54	1
Temperature	21.1	HF	1.0	1.0	Degrees C			10/17/18 14:54	1
Chloride	68		6.0	0.51	mg/L			10/27/18 22:27	2
Fluoride	0.32	J	1.0	0.12	mg/L			10/27/18 22:27	2
Sulfate	3000	B	250	12	mg/L			10/31/18 05:31	50
Total Dissolved Solids (TDS)	4700		40	19	mg/L			10/16/18 15:30	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			10/17/18 13:01	1

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			10/17/18 15:18	1
Temperature	22.2	HF	1.0	1.0	Degrees C			10/17/18 15:18	1
Chloride	140		6.0	0.51	mg/L			10/27/18 23:04	2
Fluoride	0.16	J	1.0	0.12	mg/L			10/27/18 23:04	2
Sulfate	3100	B	250	12	mg/L			10/31/18 05:49	50
Total Dissolved Solids (TDS)	5200		40	19	mg/L			10/16/18 15:30	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			10/17/18 13:01	1

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
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			10/17/18 15:09	1
Temperature	21.7	HF	1.0	1.0	Degrees C			10/17/18 15:09	1
Chloride	230		15	1.3	mg/L			10/28/18 00:19	5
Fluoride	ND		2.5	0.30	mg/L			10/28/18 00:19	5
Sulfate	5400	B	250	12	mg/L			10/31/18 06:06	50
Total Dissolved Solids (TDS)	8200		100	47	mg/L			10/16/18 15:30	1
Total Suspended Solids	3.6	J	4.0	1.1	mg/L			10/17/18 13:01	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU			10/17/18 15:14	1
Temperature	22.0	HF	1.0	1.0	Degrees C			10/17/18 15:14	1
Chloride	ND		3.0	0.25	mg/L			10/28/18 00:56	1
Fluoride	ND		0.50	0.060	mg/L			10/28/18 00:56	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

General Chemistry (Continued)

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.27	J	5.0	0.23	mg/L			10/28/18 00:56	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/18/18 20:26	1
Total Suspended Solids	ND		4.0	1.1	mg/L			10/17/18 13:01	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.373		0.213	0.216	1.00	0.275	pCi/L	10/18/18 09:34	11/09/18 08:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					10/18/18 09:34	11/09/18 08:34	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.285		0.165	0.167	1.00	0.194	pCi/L	10/18/18 09:34	11/09/18 08:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					10/18/18 09:34	11/09/18 08:34	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.294		0.179	0.181	1.00	0.231	pCi/L	10/18/18 09:34	11/09/18 08:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					10/18/18 09:34	11/09/18 08:34	1

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.183	U	0.148	0.149	1.00	0.209	pCi/L	10/18/18 09:34	11/09/18 08:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					10/18/18 09:34	11/09/18 08:34	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.566		0.207	0.213	1.00	0.171	pCi/L	10/18/18 09:34	11/09/18 08:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					10/18/18 09:34	11/09/18 08:34	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.456	U	0.341	0.344	1.00	0.536	pCi/L	10/18/18 10:59	11/07/18 10:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					10/18/18 10:59	11/07/18 10:19	1
Y Carrier	76.6		40 - 110					10/18/18 10:59	11/07/18 10:19	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.00		0.365	0.377	1.00	0.500	pCi/L	10/18/18 10:59	11/07/18 10:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					10/18/18 10:59	11/07/18 10:19	1
Y Carrier	79.3		40 - 110					10/18/18 10:59	11/07/18 10:19	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.360	U	0.322	0.323	1.00	0.516	pCi/L	10/18/18 10:59	11/07/18 10:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					10/18/18 10:59	11/07/18 10:19	1
Y Carrier	77.0		40 - 110					10/18/18 10:59	11/07/18 10:19	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.753		0.362	0.368	1.00	0.521	pCi/L	10/18/18 10:59	11/07/18 10:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					10/18/18 10:59	11/07/18 10:19	1
Y Carrier	74.8		40 - 110					10/18/18 10:59	11/07/18 10:19	1

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.410	U	0.305	0.307	1.00	0.476	pCi/L	10/18/18 10:59	11/07/18 10:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					10/18/18 10:59	11/07/18 10:19	1
Y Carrier	74.8		40 - 110					10/18/18 10:59	11/07/18 10:19	1

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

Client Sample ID: W-1
Date Collected: 10/10/18 15:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.830		0.402	0.406	5.00	0.536	pCi/L		11/15/18 17:00	1

Client Sample ID: W-2
Date Collected: 10/10/18 14:10
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.29		0.401	0.412	5.00	0.500	pCi/L		11/15/18 17:00	1

Client Sample ID: W-3
Date Collected: 10/10/18 16:25
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.653		0.368	0.370	5.00	0.516	pCi/L		11/15/18 17:00	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Client Sample ID: W-4
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.936		0.391	0.397	5.00	0.521	pCi/L		11/15/18 17:00	1

Client Sample ID: W-4D
Date Collected: 10/10/18 13:00
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.976		0.369	0.374	5.00	0.476	pCi/L		11/15/18 17:00	1

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 350777

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		10/17/18 14:00	10/18/18 10:27	1

Lab Sample ID: LCS 240-350481/2-A
Matrix: Water
Analysis Batch: 350777

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.00	1.02		mg/L		102	80 - 120

Lab Sample ID: 280-115507-1 MS
Matrix: Water
Analysis Batch: 350777

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	0.58		1.00	1.48		mg/L		90	75 - 125

Lab Sample ID: 280-115507-1 MSD
Matrix: Water
Analysis Batch: 350777

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	0.58		1.00	1.42		mg/L		84	75 - 125	4	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/17/18 14:00	10/19/18 16:27	1
Arsenic	ND		0.0050	0.00075	mg/L		10/17/18 14:00	10/19/18 16:27	1
Barium	ND		0.0050	0.0022	mg/L		10/17/18 14:00	10/19/18 16:27	1
Calcium	ND		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:27	1
Cadmium	ND		0.0010	0.00021	mg/L		10/17/18 14:00	10/19/18 16:27	1
Cobalt	ND		0.0010	0.00019	mg/L		10/17/18 14:00	10/19/18 16:27	1
Chromium	ND		0.0020	0.00098	mg/L		10/17/18 14:00	10/19/18 16:27	1
Molybdenum	ND		0.010	0.0011	mg/L		10/17/18 14:00	10/19/18 16:27	1
Lead	ND		0.0010	0.00045	mg/L		10/17/18 14:00	10/19/18 16:27	1
Selenium	ND		0.0050	0.00089	mg/L		10/17/18 14:00	10/19/18 16:27	1
Thallium	ND		0.0010	0.00020	mg/L		10/17/18 14:00	10/19/18 16:27	1

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 351620

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0010	0.00031	mg/L		10/17/18 14:00	10/23/18 15:38	1
Lithium	ND		0.0080	0.0017	mg/L		10/17/18 14:00	10/23/18 15:38	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

Lab Sample ID: LCS 240-350481/3-A

Matrix: Water

Analysis Batch: 351121

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0980		mg/L		98	80 - 120
Arsenic	1.00	0.862		mg/L		86	80 - 120
Barium	1.00	1.01		mg/L		101	80 - 120
Calcium	10.0	8.99		mg/L		90	80 - 120
Cadmium	1.00	0.980		mg/L		98	80 - 120
Cobalt	1.00	0.910		mg/L		91	80 - 120
Chromium	1.00	0.963		mg/L		96	80 - 120
Molybdenum	0.100	0.0969		mg/L		97	80 - 120
Lead	1.00	0.993		mg/L		99	80 - 120
Selenium	1.00	0.889		mg/L		89	80 - 120
Thallium	0.250	0.245		mg/L		98	80 - 120

Lab Sample ID: LCS 240-350481/3-A

Matrix: Water

Analysis Batch: 351620

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	1.00	0.964		mg/L		96	80 - 120
Lithium	0.100	0.0948		mg/L		95	80 - 120

Lab Sample ID: 280-115507-1 MS

Matrix: Water

Analysis Batch: 351121

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		0.100	0.0946		mg/L		95	75 - 125
Arsenic	ND		1.00	0.934		mg/L		93	75 - 125
Barium	0.0099		1.00	0.962		mg/L		95	75 - 125
Calcium	320		10.0	315	4	mg/L		-37	75 - 125
Cadmium	0.00036	J	1.00	0.906		mg/L		91	75 - 125
Cobalt	0.00094	J	1.00	0.925		mg/L		92	75 - 125
Chromium	ND		1.00	0.861		mg/L		86	75 - 125
Molybdenum	0.0035	J	0.100	0.103		mg/L		100	75 - 125
Lead	ND		1.00	0.886		mg/L		89	75 - 125
Selenium	0.010		1.00	0.904		mg/L		89	75 - 125
Thallium	ND		0.250	0.220		mg/L		88	75 - 125

Lab Sample ID: 280-115507-1 MS

Matrix: Water

Analysis Batch: 351620

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	0.00095	J	1.00	1.05		mg/L		105	75 - 125
Lithium	0.29	F1	0.100	0.389		mg/L		99	75 - 125

Lab Sample ID: 280-115507-1 MSD

Matrix: Water

Analysis Batch: 351121

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		0.100	0.0921		mg/L		92	75 - 125	3	20

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Lab Sample ID: 280-115507-1 MSD

Matrix: Water

Analysis Batch: 351121

Client Sample ID: W-1
Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	0.915		mg/L		91	75 - 125	2	20
Barium	0.0099		1.00	0.939		mg/L		93	75 - 125	2	20
Calcium	320		10.0	301	4	mg/L		-178	75 - 125	5	20
Cadmium	0.00036	J	1.00	0.884		mg/L		88	75 - 125	3	20
Cobalt	0.00094	J	1.00	0.903		mg/L		90	75 - 125	2	20
Chromium	ND		1.00	0.839		mg/L		84	75 - 125	2	20
Molybdenum	0.0035	J	0.100	0.101		mg/L		97	75 - 125	2	20
Lead	ND		1.00	0.861		mg/L		86	75 - 125	3	20
Selenium	0.010		1.00	0.883		mg/L		87	75 - 125	2	20
Thallium	ND		0.250	0.216		mg/L		87	75 - 125	2	20

Lab Sample ID: 280-115507-1 MSD

Matrix: Water

Analysis Batch: 351620

Client Sample ID: W-1
Prep Type: Total Recoverable

Prep Batch: 350481

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Beryllium	0.00095	J	1.00	0.911		mg/L		91	75 - 125	14	20
Lithium	0.29	F1	0.100	0.340	F1	mg/L		50	75 - 125	13	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-350490/1-A

Matrix: Water

Analysis Batch: 350791

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 350490

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/17/18 14:00	10/18/18 09:57	1

Lab Sample ID: LCS 240-350490/2-A

Matrix: Water

Analysis Batch: 350791

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 350490

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.34		ug/L		87	80 - 120

Lab Sample ID: 280-115507-2 MS

Matrix: Water

Analysis Batch: 350791

Client Sample ID: W-2

Prep Type: Total/NA

Prep Batch: 350490

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	1.17		ug/L		117	80 - 120

Lab Sample ID: 280-115507-2 MSD

Matrix: Water

Analysis Batch: 350791

Client Sample ID: W-2

Prep Type: Total/NA

Prep Batch: 350490

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	1.08		ug/L		108	80 - 120	8	20

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

Method: 9040B - pH

Lab Sample ID: LCS 280-433929/29

Matrix: Water

Analysis Batch: 433929

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

Lab Sample ID: LCS 280-433929/4

Matrix: Water

Analysis Batch: 433929

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-435201/6

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/27/18 11:51	1
Fluoride	ND		0.50	0.060	mg/L			10/27/18 11:51	1
Sulfate	ND		5.0	0.23	mg/L			10/27/18 11:51	1

Lab Sample ID: LCS 280-435201/4

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.04		mg/L		101	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-435201/5

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	100		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.06		mg/L		101	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-435201/3

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.61	J	mg/L		105	50 - 150
Fluoride	0.200	0.194	J	mg/L		97	50 - 150
Sulfate	2.50	2.71	J	mg/L		108	50 - 150

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Lab Sample ID: MB 280-435513/13

Matrix: Water

Analysis Batch: 435513

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.450	J	3.0	0.25	mg/L			10/30/18 13:39	1
Fluoride	ND		0.50	0.060	mg/L			10/30/18 13:39	1
Sulfate	0.470	J	5.0	0.23	mg/L			10/30/18 13:39	1

Lab Sample ID: LCS 280-435513/11

Matrix: Water

Analysis Batch: 435513

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.9		mg/L		100	90 - 110
Fluoride	5.00	4.72		mg/L		94	90 - 110
Sulfate	100	99.8		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-435513/12

Matrix: Water

Analysis Batch: 435513

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	99.8		mg/L		100	90 - 110	0	10
Fluoride	5.00	4.69		mg/L		94	90 - 110	1	10
Sulfate	100	99.7		mg/L		100	90 - 110	0	10

Lab Sample ID: MRL 280-435513/10

Matrix: Water

Analysis Batch: 435513

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	2.29	J	mg/L		92	50 - 150
Fluoride	0.200	0.228	J	mg/L		114	50 - 150
Sulfate	2.50	2.23	J	mg/L		89	50 - 150

Lab Sample ID: 280-115507-1 MS

Matrix: Water

Analysis Batch: 435513

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	40	J B	500	568		mg/L		106	80 - 120
Fluoride	1.9	J	100	95.9		mg/L		94	80 - 120
Sulfate	2700	B	500	3270	4	mg/L		109	80 - 120

Lab Sample ID: 280-115507-1 MSD

Matrix: Water

Analysis Batch: 435513

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	40	J B	500	571		mg/L		106	80 - 120	1	20
Fluoride	1.9	J	100	96.5		mg/L		95	80 - 120	1	20
Sulfate	2700	B	500	3290	4	mg/L		112	80 - 120	0	20

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Lab Sample ID: 280-115507-2 MS

Matrix: Water

Analysis Batch: 435513

Client Sample ID: W-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	83	J B	1250	1400		mg/L		105	80 - 120
Fluoride	ND		250	240		mg/L		96	80 - 120
Sulfate	4500	B	1250	5900		mg/L		111	80 - 120

Lab Sample ID: 280-115507-2 MSD

Matrix: Water

Analysis Batch: 435513

Client Sample ID: W-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	83	J B	1250	1400		mg/L		106	80 - 120	1	20
Fluoride	ND		250	241		mg/L		97	80 - 120	1	20
Sulfate	4500	B	1250	5890		mg/L		111	80 - 120	0	20

Lab Sample ID: 280-115507-1 DU

Matrix: Water

Analysis Batch: 435513

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	40	J B	40.3	J	mg/L		0.1	15
Fluoride	1.9	J	1.90	J	mg/L		0.4	15
Sulfate	2700	B	2740		mg/L		0.3	15

Lab Sample ID: 280-115507-2 DU

Matrix: Water

Analysis Batch: 435513

Client Sample ID: W-2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	83	J B	82.7	J	mg/L		0.2	15
Fluoride	ND		ND		mg/L		NC	15
Sulfate	4500	B	4490		mg/L		0.3	15

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

Lab Sample ID: MB 280-433648/1

Matrix: Water

Analysis Batch: 433648

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/16/18 15:30	1

Lab Sample ID: LCS 280-433648/2

Matrix: Water

Analysis Batch: 433648

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	476		mg/L		95	86 - 110

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Lab Sample ID: MB 280-434060/1
Matrix: Water
Analysis Batch: 434060

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/18/18 20:26	1

Lab Sample ID: LCS 280-434060/2
Matrix: Water
Analysis Batch: 434060

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	489		mg/L		98	86 - 110

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

Lab Sample ID: MB 280-433623/1
Matrix: Water
Analysis Batch: 433623

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			10/16/18 13:04	1

Lab Sample ID: LCS 280-433623/2
Matrix: Water
Analysis Batch: 433623

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	104		mg/L		104	86 - 114

Lab Sample ID: LCSD 280-433623/3
Matrix: Water
Analysis Batch: 433623

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	99.6		mg/L		100	86 - 114	4	20

Lab Sample ID: MB 280-433797/1
Matrix: Water
Analysis Batch: 433797

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			10/17/18 13:01	1

Lab Sample ID: LCS 280-433797/2
Matrix: Water
Analysis Batch: 433797

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	97.2		mg/L		97	86 - 114

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Lab Sample ID: LCSD 280-433797/3
Matrix: Water
Analysis Batch: 433797

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	95.2		mg/L		95	86 - 114	2	20

Lab Sample ID: 280-115507-9 DU
Matrix: Water
Analysis Batch: 433797

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

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

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-395714/19-A
Matrix: Water
Analysis Batch: 400077

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395714

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2060		0.136	0.138	1.00	0.189	pCi/L	10/18/18 09:34	11/09/18 10:03	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					10/18/18 09:34	11/09/18 10:03	1

Lab Sample ID: LCS 160-395714/1-A
Matrix: Water
Analysis Batch: 400066

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 395714

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	12.80		1.44	1.00	0.200	pCi/L	113	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	91.7		40 - 110						

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-395732/19-A
Matrix: Water
Analysis Batch: 399720

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 395732

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2512	U	0.276	0.277	1.00	0.453	pCi/L	10/18/18 10:59	11/07/18 10:20	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					10/18/18 10:59	11/07/18 10:20	1
Y Carrier	73.6		40 - 110					10/18/18 10:59	11/07/18 10:20	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-1

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

Lab Sample ID: LCS 160-395732/1-A

Matrix: Water

Analysis Batch: 399720

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 395732

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.24	8.644		1.11	1.00	0.536	pCi/L	94	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	91.7		40 - 110
Y Carrier	64.7		40 - 110

QC Association Summary

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

TestAmerica Job ID: 280-115507-1

Metals

Prep Batch: 350481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total Recoverable	Water	3005A	
280-115507-2	W-2	Total Recoverable	Water	3005A	
280-115507-3	W-3	Total Recoverable	Water	3005A	
280-115507-4	W-4	Total Recoverable	Water	3005A	
280-115507-5	W-4D	Total Recoverable	Water	3005A	
280-115507-6	MW-6	Total Recoverable	Water	3005A	
280-115507-7	MW-7	Total Recoverable	Water	3005A	
280-115507-8	MW-8	Total Recoverable	Water	3005A	
280-115507-9	MW-8EB	Total Recoverable	Water	3005A	
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350481/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-115507-1 MS	W-1	Total Recoverable	Water	3005A	
280-115507-1 MS	W-1	Total Recoverable	Water	3005A	
280-115507-1 MSD	W-1	Total Recoverable	Water	3005A	
280-115507-1 MSD	W-1	Total Recoverable	Water	3005A	

Prep Batch: 350490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	7470A	
280-115507-2	W-2	Total/NA	Water	7470A	
280-115507-3	W-3	Total/NA	Water	7470A	
280-115507-4	W-4	Total/NA	Water	7470A	
280-115507-5	W-4D	Total/NA	Water	7470A	
280-115507-6	MW-6	Total/NA	Water	7470A	
280-115507-7	MW-7	Total/NA	Water	7470A	
280-115507-8	MW-8	Total/NA	Water	7470A	
280-115507-9	MW-8EB	Total/NA	Water	7470A	
MB 240-350490/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-350490/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-115507-2 MS	W-2	Total/NA	Water	7470A	
280-115507-2 MSD	W-2	Total/NA	Water	7470A	

Analysis Batch: 350777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total Recoverable	Water	6010C	350481
280-115507-2	W-2	Total Recoverable	Water	6010C	350481
280-115507-3	W-3	Total Recoverable	Water	6010C	350481
280-115507-4	W-4	Total Recoverable	Water	6010C	350481
280-115507-5	W-4D	Total Recoverable	Water	6010C	350481
280-115507-6	MW-6	Total Recoverable	Water	6010C	350481
280-115507-7	MW-7	Total Recoverable	Water	6010C	350481
280-115507-8	MW-8	Total Recoverable	Water	6010C	350481
280-115507-9	MW-8EB	Total Recoverable	Water	6010C	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6010C	350481
LCS 240-350481/2-A	Lab Control Sample	Total Recoverable	Water	6010C	350481
280-115507-1 MS	W-1	Total Recoverable	Water	6010C	350481
280-115507-1 MSD	W-1	Total Recoverable	Water	6010C	350481

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-115507-1

Metals (Continued)

Analysis Batch: 350791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	7470A	350490
280-115507-2	W-2	Total/NA	Water	7470A	350490
280-115507-3	W-3	Total/NA	Water	7470A	350490
280-115507-4	W-4	Total/NA	Water	7470A	350490
280-115507-5	W-4D	Total/NA	Water	7470A	350490
280-115507-6	MW-6	Total/NA	Water	7470A	350490
280-115507-7	MW-7	Total/NA	Water	7470A	350490
280-115507-8	MW-8	Total/NA	Water	7470A	350490
280-115507-9	MW-8EB	Total/NA	Water	7470A	350490
MB 240-350490/1-A	Method Blank	Total/NA	Water	7470A	350490
LCS 240-350490/2-A	Lab Control Sample	Total/NA	Water	7470A	350490
280-115507-2 MS	W-2	Total/NA	Water	7470A	350490
280-115507-2 MSD	W-2	Total/NA	Water	7470A	350490

Analysis Batch: 351121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total Recoverable	Water	6020A	350481
280-115507-2	W-2	Total Recoverable	Water	6020A	350481
280-115507-3	W-3	Total Recoverable	Water	6020A	350481
280-115507-4	W-4	Total Recoverable	Water	6020A	350481
280-115507-5	W-4D	Total Recoverable	Water	6020A	350481
280-115507-6	MW-6	Total Recoverable	Water	6020A	350481
280-115507-7	MW-7	Total Recoverable	Water	6020A	350481
280-115507-8	MW-8	Total Recoverable	Water	6020A	350481
280-115507-9	MW-8EB	Total Recoverable	Water	6020A	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6020A	350481
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350481
280-115507-1 MS	W-1	Total Recoverable	Water	6020A	350481
280-115507-1 MSD	W-1	Total Recoverable	Water	6020A	350481

Analysis Batch: 351620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total Recoverable	Water	6020A	350481
280-115507-2	W-2	Total Recoverable	Water	6020A	350481
280-115507-3	W-3	Total Recoverable	Water	6020A	350481
280-115507-4	W-4	Total Recoverable	Water	6020A	350481
280-115507-5	W-4D	Total Recoverable	Water	6020A	350481
280-115507-6	MW-6	Total Recoverable	Water	6020A	350481
280-115507-7	MW-7	Total Recoverable	Water	6020A	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6020A	350481
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350481
280-115507-1 MS	W-1	Total Recoverable	Water	6020A	350481
280-115507-1 MSD	W-1	Total Recoverable	Water	6020A	350481

Analysis Batch: 351820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-8	MW-8	Total Recoverable	Water	6020A	350481
280-115507-9	MW-8EB	Total Recoverable	Water	6020A	350481

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-115507-1

General Chemistry

Analysis Batch: 433623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	SM 2540D	
280-115507-2	W-2	Total/NA	Water	SM 2540D	
280-115507-3	W-3	Total/NA	Water	SM 2540D	
280-115507-4	W-4	Total/NA	Water	SM 2540D	
280-115507-5	W-4D	Total/NA	Water	SM 2540D	
MB 280-433623/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-433623/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-433623/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 433648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	SM 2540C	
280-115507-2	W-2	Total/NA	Water	SM 2540C	
280-115507-3	W-3	Total/NA	Water	SM 2540C	
280-115507-4	W-4	Total/NA	Water	SM 2540C	
280-115507-5	W-4D	Total/NA	Water	SM 2540C	
280-115507-6	MW-6	Total/NA	Water	SM 2540C	
280-115507-7	MW-7	Total/NA	Water	SM 2540C	
280-115507-8	MW-8	Total/NA	Water	SM 2540C	
MB 280-433648/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-433648/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 433797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total/NA	Water	SM 2540D	
280-115507-7	MW-7	Total/NA	Water	SM 2540D	
280-115507-8	MW-8	Total/NA	Water	SM 2540D	
280-115507-9	MW-8EB	Total/NA	Water	SM 2540D	
MB 280-433797/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-433797/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-433797/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-115507-9 DU	MW-8EB	Total/NA	Water	SM 2540D	

Analysis Batch: 433929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	9040B	
280-115507-2	W-2	Total/NA	Water	9040B	
280-115507-3	W-3	Total/NA	Water	9040B	
280-115507-4	W-4	Total/NA	Water	9040B	
280-115507-5	W-4D	Total/NA	Water	9040B	
280-115507-6	MW-6	Total/NA	Water	9040B	
280-115507-7	MW-7	Total/NA	Water	9040B	
280-115507-8	MW-8	Total/NA	Water	9040B	
280-115507-9	MW-8EB	Total/NA	Water	9040B	
LCS 280-433929/29	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-433929/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 434060

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-9	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-434060/1	Method Blank	Total/NA	Water	SM 2540C	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-115507-1

General Chemistry (Continued)

Analysis Batch: 434060 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-434060/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 435201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	9056A	
280-115507-2	W-2	Total/NA	Water	9056A	
280-115507-3	W-3	Total/NA	Water	9056A	
280-115507-4	W-4	Total/NA	Water	9056A	
280-115507-5	W-4D	Total/NA	Water	9056A	
280-115507-6	MW-6	Total/NA	Water	9056A	
280-115507-7	MW-7	Total/NA	Water	9056A	
280-115507-8	MW-8	Total/NA	Water	9056A	
280-115507-9	MW-8EB	Total/NA	Water	9056A	
MB 280-435201/6	Method Blank	Total/NA	Water	9056A	
LCS 280-435201/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435201/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435201/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 435513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	9056A	
280-115507-2	W-2	Total/NA	Water	9056A	
280-115507-3	W-3	Total/NA	Water	9056A	
280-115507-4	W-4	Total/NA	Water	9056A	
280-115507-5	W-4D	Total/NA	Water	9056A	
280-115507-6	MW-6	Total/NA	Water	9056A	
280-115507-7	MW-7	Total/NA	Water	9056A	
280-115507-8	MW-8	Total/NA	Water	9056A	
MB 280-435513/13	Method Blank	Total/NA	Water	9056A	
LCS 280-435513/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435513/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435513/10	Lab Control Sample	Total/NA	Water	9056A	
280-115507-1 MS	W-1	Total/NA	Water	9056A	
280-115507-1 MSD	W-1	Total/NA	Water	9056A	
280-115507-2 MS	W-2	Total/NA	Water	9056A	
280-115507-2 MSD	W-2	Total/NA	Water	9056A	
280-115507-1 DU	W-1	Total/NA	Water	9056A	
280-115507-2 DU	W-2	Total/NA	Water	9056A	

Rad

Prep Batch: 395714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	PrecSep-21	
280-115507-2	W-2	Total/NA	Water	PrecSep-21	
280-115507-3	W-3	Total/NA	Water	PrecSep-21	
280-115507-4	W-4	Total/NA	Water	PrecSep-21	
280-115507-5	W-4D	Total/NA	Water	PrecSep-21	
MB 160-395714/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-395714/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-115507-1

Rad (Continued)

Prep Batch: 395732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-1	W-1	Total/NA	Water	PrecSep_0	
280-115507-2	W-2	Total/NA	Water	PrecSep_0	
280-115507-3	W-3	Total/NA	Water	PrecSep_0	
280-115507-4	W-4	Total/NA	Water	PrecSep_0	
280-115507-5	W-4D	Total/NA	Water	PrecSep_0	
MB 160-395732/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-395732/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: W-1

Date Collected: 10/10/18 15:10

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-1

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 12:12	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:31	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 15:42	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:01	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 14:30	SGB	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	435513	10/30/18 21:05	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435201	10/27/18 18:42	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433623	10/16/18 13:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.93 mL	1.0 g	395714	10/18/18 09:34	JLC	TAL SL
Total/NA	Analysis	9315		1			400066	11/09/18 08:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			749.93 mL	1.0 g	395732	10/18/18 10:59	JLC	TAL SL
Total/NA	Analysis	9320		1			399720	11/07/18 10:19	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			401115	11/15/18 17:00	RTM	TAL SL

Client Sample ID: W-2

Date Collected: 10/10/18 14:10

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-2

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 12:43	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:41	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 15:59	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:03	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 14:45	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 03:29	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435201	10/27/18 19:19	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433623	10/16/18 13:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.69 mL	1.0 g	395714	10/18/18 09:34	JLC	TAL SL
Total/NA	Analysis	9315		1			400066	11/09/18 08:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			749.69 mL	1.0 g	395732	10/18/18 10:59	JLC	TAL SL
Total/NA	Analysis	9320		1			399720	11/07/18 10:19	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			401115	11/15/18 17:00	RTM	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: W-3

Date Collected: 10/10/18 16:25

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-3

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 12:47	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:44	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 16:01	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:16	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 14:58	SGB	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	435513	10/31/18 04:39	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	435201	10/27/18 20:34	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433623	10/16/18 13:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.01 mL	1.0 g	395714	10/18/18 09:34	JLC	TAL SL
Total/NA	Analysis	9315		1			400066	11/09/18 08:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.01 mL	1.0 g	395732	10/18/18 10:59	JLC	TAL SL
Total/NA	Analysis	9320		1			399720	11/07/18 10:19	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			401115	11/15/18 17:00	RTM	TAL SL

Client Sample ID: W-4

Date Collected: 10/10/18 13:00

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-4

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 12:52	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:46	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 16:03	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:18	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:03	SGB	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	435513	10/31/18 04:57	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	435201	10/27/18 21:12	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433623	10/16/18 13:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			750.02 mL	1.0 g	395714	10/18/18 09:34	JLC	TAL SL
Total/NA	Analysis	9315		1			400066	11/09/18 08:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.02 mL	1.0 g	395732	10/18/18 10:59	JLC	TAL SL
Total/NA	Analysis	9320		1			399720	11/07/18 10:19	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			401115	11/15/18 17:00	RTM	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: W-4D

Date Collected: 10/10/18 13:00

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-5

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 12:56	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:53	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 16:06	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:20	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 14:49	SGB	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	435513	10/31/18 05:14	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	435201	10/27/18 21:49	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433623	10/16/18 13:04	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			749.71 mL	1.0 g	395714	10/18/18 09:34	JLC	TAL SL
Total/NA	Analysis	9315		1			400066	11/09/18 08:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			749.71 mL	1.0 g	395732	10/18/18 10:59	JLC	TAL SL
Total/NA	Analysis	9320		1			399720	11/07/18 10:19	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			401115	11/15/18 17:00	RTM	TAL SL

Client Sample ID: MW-6

Date Collected: 10/11/18 10:30

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			350777	10/18/18 13:54	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:55	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 16:08	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:22	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 14:54	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 05:31	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435201	10/27/18 22:27	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433797	10/17/18 13:01	JAP	TAL DEN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: MW-7

Date Collected: 10/11/18 09:35

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			350777	10/18/18 13:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:02	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351620	10/23/18 16:10	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:24	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:18	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 05:49	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435201	10/27/18 23:04	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433797	10/17/18 13:01	JAP	TAL DEN

Client Sample ID: MW-8

Date Collected: 10/11/18 12:20

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:10	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:04	DSH	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351820	10/24/18 14:17	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:26	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:09	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 06:06	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	435201	10/28/18 00:19	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433797	10/17/18 13:01	JAP	TAL DEN

Client Sample ID: MW-8EB

Date Collected: 10/11/18 12:40

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:23	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:06	DSH	TAL CAN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-115507-1

Client Sample ID: MW-8EB

Date Collected: 10/11/18 12:40

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351820	10/24/18 14:19	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	350490	10/17/18 14:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1			350791	10/18/18 10:28	AJC	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:14	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/28/18 00:56	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	434060	10/18/18 20:26	VB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	433797	10/17/18 13:01	JAP	TAL DEN

Laboratory References:

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

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

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-115507-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-115507-1

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
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

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

TestAmerica Denver

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

Chain of Custody Record

TestAmerica
1001 E. 17th Avenue, Suite 100, Denver, CO 80202

Client Information		Sample: <u>TARA Kent</u>	Lab No.: <u>280-77542-25460-1</u>
Client Contact: <u>Anna Lundin</u>		Phone: <u>720 933 7496</u>	E-Mail: <u>stephanie.rollmeyer@testamericadeno.com</u>
Company: <u>HDR Inc</u>		Carrier Tracking No.: <u></u>	

Address: <u>9781 S. Meridian Blvd Suite 400</u>	Date Date Requested: <u></u>	Analysis Requested	
City: <u>Englewood</u>	TAT Requested (days): <u></u>	☒ Field Filtered Sample (Yes or No) ☒ Perform MS/MSD (Yes or No)	

Site: <u>303</u>	PO #: <u>DEN 018</u>	2540C - Total Dissolved Solids (TDS)	6010C, 6020A, 1470A	9040B, 9050A, 28D	2540D - Total Suspended Solids	9315, Ra226, 9320, Ra228
Phone: <u>734 263 7136 (tel)</u>	MO #: <u></u>	☒ Total Number of containers				
Email: <u>anna.lundin@hdrinc.com</u>	Project #: <u>28014317</u>	Preservation Codes: A - HCL, B - NaOH, C - AsMAO2, D - Nitric Acid, E - NaHSO4, F - NaOH, G - Acetic Acid, H - Acetic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Nitric, N - Nitric, O - AsMAO2, P - NaOH, Q - NaHSO4, R - NaHSO4, S - H2SO4, T - TSP Decontaminant, U - Acetone, V - MCAK, W - pH 4.5, X - Other (Specify):				
Project Name: <u>Xcel Energy GW CCR Monitoring - Hayden</u>	Site: <u>Colorado</u>	Special Instructions/Note:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab, B=Blank, A=Ali)	Matrix (Water, Soil, Sediment, Air, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	6010C, 6020A, 1470A	9040B, 9050A, 28D	2540D - Total Suspended Solids	9315, Ra226, 9320, Ra228	Total Number of containers	Special Instructions/Note
W-1	10.10.18	1510	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
W-2	10.10.18	1410	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
W-3	10.10.18	1625	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
W-4	10.10.18	1300	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
Field Duplicate W-4D	10.10.18	1300	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
Equipment Blank				Water	☒	☒	☒	☒	☒	☒	☒	☒	
MW-6	10.11.18	1030	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
MW-7	10.11.18	0935	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
MW-8	10.11.19	1220	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	
MW-8EB	10.11.18	1240	G	Water	☒	☒	☒	☒	☒	☒	☒	☒	



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	☐ Dispose By Lab ☐ Archive For <u>Months</u>
Deliverable Requested: <u>I, II, III, IV, Other (Specify):</u>		Special Instructions/OC Requirements:	
Empty Kit Relinquished by: <u></u>	Date: <u></u>	Time: <u></u>	Method of Shipment: <u></u>
Relinquished by: <u>TARA Kent</u>	Date/Time: <u>10.12.18 1415</u>	Company: <u>HDR</u>	Received by: <u>Stephanie Rollmeyer</u>
Relinquished by: <u></u>	Date/Time: <u></u>	Company: <u></u>	Received by: <u></u>
Relinquished by: <u></u>	Date/Time: <u></u>	Company: <u></u>	Received by: <u></u>
Custody Seals Intact: <u>A Yes A No</u>	Custody Seal No.: <u></u>	Cool Temp (yes/no) C and Other Remarks: <u>31.36 to 0.71e 17</u>	

Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record



TestAmerica

[illegible]

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002

Chain of Custody Record

Phone (303) 736-0100 Fax (303) 431-7171



TestAmerica

11/13/18

Client Information (Sub Contract Lab)		Sample: Barb, Darlene F		Lab PM: Barb, Darlene F		Center Tracking Mass: 280-458236.1		COC No: 280-458236.1	
Client Contact: Barb, Darlene F		Phone: 303-497-0772		E-Mail: darlene.barry@testamerica.com		State of Origin: Colorado		Page: Page 1 of 1	
Shipping/Receiving: TestAmerica Laboratories, Inc.		Address: 4101 Shaffel Street NW, North Canton, OH 44720		City: North Canton		State Zip: OH, 44720		Job #: 280-115507-1	
Phone: 330-497-0396(Tel) 330-497-0772(Fax)		Fax: 330-497-0772(Fax)		Due Date Requested: 11/15/2018		TAT Requested (days): 7		Preservation Codes: 280-115507-1	
Project Name: Xcel Energy GW CCR Monitoring - Hayden		Project #: 28014377		RO #: WO #:		Analysis Requested: Analysis Requested		Preservation Codes: 280-115507-1	
Site: Xcel Energy CCR - Hayden Station		SSOW#: SSOW#:		Field Filtered Sample (Yes or No) X		Field Filtered Sample (Yes or No) X		Preservation Codes: 280-115507-1	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, G=grab, M=mountain, S=sediment)	
W-1 (280-115507-1)		10/10/18		15:10		Water		Water	
W-2 (280-115507-2)		10/10/18		14:10		Water		Water	
W-3 (280-115507-3)		10/10/18		16:25		Water		Water	
W-4 (280-115507-4)		10/10/18		15:00		Water		Water	
W-4D (280-115507-5)		10/10/18		13:00		Water		Water	
MW-6 (280-115507-6)		10/11/18		10:30		Water		Water	
MW-7 (280-115507-7)		10/11/18		09:35		Water		Water	
MW-8 (280-115507-8)		10/11/18		12:20		Water		Water	
MW-8EE (280-115507-9)		10/11/18		12:40		Water		Water	
Notes: Since laboratory accreditation is subject to change, TestAmerica Laboratories, Inc. places the ownership of all samples and the responsibility of maintaining accreditation in the State of Origin listed above for analysis. Samples must be stored in 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 accreditation is not current to date, return the signed Chain of Custody to TestAmerica Laboratories, Inc.									
Possible Hazard Identification Unconfirmed ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ☐ Months Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4									
Empty Kit Relinquished by: 11/15/18 16:57 Relinquished by: 11/15/18 16:57 Relinquished by: 11/15/18 16:57 Relinquished by: 11/15/18 16:57									
Custody Seal Intact: Yes Custody Seal No: No									

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

Canton Facility: _____

Client: TA Denver Site Name: _____ Cooler/unpacked by: [Signature]

Cooler Received on: 10/16/18 Opened on: 10/16/18

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

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

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

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
 IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 12.2 °C Corrected Cooler Temp. 13.1 °C
 IR GUN #36 (CF +0.6 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels be reconciled with the COC? Yes No
 9. Were correct bottle(s) used for the test(s) indicated? Yes No
 10. Sufficient quantity received to perform indicated analyses? Yes No
 11. Are these work share samples? Yes No
 If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC849161
 13. Were VOAs on the COC? Yes No
 14. Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA
 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 16. Was a LL Hg or Me Hg trip blank present? Yes No

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: 280-115507-1

Login Number: 115507

List Source: TestAmerica Denver

List Number: 1

Creator: Diffendall, Jessica L

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (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: 280-115507-1

Login Number: 115507

List Number: 3

Creator: Dupart, Lacey S

List Source: TestAmerica St. Louis

List Creation: 10/17/18 11:32 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-115507-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-115507-1	W-1	101	
280-115507-2	W-2	105	
280-115507-3	W-3	101	
280-115507-4	W-4	98.5	
280-115507-5	W-4D	107	
LCS 160-395714/1-A	Lab Control Sample	91.7	
MB 160-395714/19-A	Method Blank	102	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-115507-1	W-1	101	76.6
280-115507-2	W-2	105	79.3
280-115507-3	W-3	101	77.0
280-115507-4	W-4	98.5	74.8
280-115507-5	W-4D	107	74.8
LCS 160-395732/1-A	Lab Control Sample	91.7	64.7
MB 160-395732/19-A	Method Blank	102	73.6
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-115507-2

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

For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:

12/21/2018 2:51:52 PM

Darlene Bandy, Project Manager I

(303)736-0188

darlene.bandy@testamericainc.com

LINKS

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-115507-2

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-115507-2

Job ID: 280-115507-2

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-115507-2

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

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

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

RECEIPT

The samples were received on 10/12/2018 2:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 4.3° C and 5.8° C.

Samples W-1 (280-115507-1), W-2 (280-115507-2), W-3 (280-115507-3), W-4 (280-115507-4) and W-4D (280-115507-5), listed on the chain of custody, are reported under job 280-115507-1.

TOTAL RECOVERABLE METALS

Samples MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/17/2018 and analyzed on 10/18/2018.

Samples MW-6 (280-115507-6)[5X] and MW-7 (280-115507-7)[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.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/17/2018 and analyzed on 10/19/2018, 10/23/2018 and 10/24/2018.

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

TOTAL DISSOLVED SOLIDS

Samples MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 10/16/2018 and 10/18/2018.

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

CORROSIVITY (PH)

Samples MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for corrosivity

Case Narrative

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

TestAmerica Job ID: 280-115507-2

Job ID: 280-115507-2 (Continued)

Laboratory: TestAmerica Denver (Continued)

(pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 10/17/2018.

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

ANIONS (28 DAYS)

Samples MW-6 (280-115507-6), MW-7 (280-115507-7), MW-8 (280-115507-8) and MW-8EB (280-115507-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/27/2018, 10/28/2018 and 10/31/2018.

Chloride and Sulfate were detected in method blank MB 280-435513/13 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Samples MW-6 (280-115507-6)[2X], MW-6 (280-115507-6)[50X], MW-7 (280-115507-7)[2X], MW-7 (280-115507-7)[50X], MW-8 (280-115507-8)[5X] and MW-8 (280-115507-8)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Detection Summary

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

TestAmerica Job ID: 280-115507-2

Client Sample ID: MW-6

Lab Sample ID: 280-115507-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	45		0.50	0.12	mg/L	5		6010C	Total Recoverable
Calcium	370		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	68		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.32	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3000	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4700		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-115507-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	47		0.50	0.12	mg/L	5		6010C	Total Recoverable
Calcium	390		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	140		6.0	0.51	mg/L	2		9056A	Total/NA
Fluoride	0.16	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3100	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	5200		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-115507-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	450		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230		15	1.3	mg/L	5		9056A	Total/NA
Sulfate	5400	B	250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	8200		100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8EB

Lab Sample ID: 280-115507-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.064	J	0.10	0.023	mg/L	1		6010C	Total Recoverable
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	0.27	J	5.0	0.23	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-115507-2

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

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

Laboratory References:

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

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

Sample Summary

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

TestAmerica Job ID: 280-115507-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-115507-6	MW-6	Water	10/11/18 10:30	10/12/18 14:15
280-115507-7	MW-7	Water	10/11/18 09:35	10/12/18 14:15
280-115507-8	MW-8	Water	10/11/18 12:20	10/12/18 14:15
280-115507-9	MW-8EB	Water	10/11/18 12:40	10/12/18 14:15

Client Sample Results

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

TestAmerica Job ID: 280-115507-2

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

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	45		0.50	0.12	mg/L	—	10/17/18 14:00	10/18/18 13:54	5

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	47		0.50	0.12	mg/L	—	10/17/18 14:00	10/18/18 13:59	5

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 13:10	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.064	J	0.10	0.023	mg/L	—	10/17/18 14:00	10/18/18 13:23	1

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

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	370		1.0	0.58	mg/L	—	10/17/18 14:00	10/19/18 16:55	1

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	390		1.0	0.58	mg/L	—	10/17/18 14:00	10/19/18 17:02	1

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	450		1.0	0.58	mg/L	—	10/17/18 14:00	10/19/18 17:04	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L	—	10/17/18 14:00	10/19/18 17:06	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-115507-2

General Chemistry

Client Sample ID: MW-6
Date Collected: 10/11/18 10:30
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6
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			10/17/18 14:54	1
Temperature	21.1	HF	1.0	1.0	Degrees C			10/17/18 14:54	1
Chloride	68		6.0	0.51	mg/L			10/27/18 22:27	2
Fluoride	0.32	J	1.0	0.12	mg/L			10/27/18 22:27	2
Sulfate	3000	B	250	12	mg/L			10/31/18 05:31	50
Total Dissolved Solids (TDS)	4700		40	19	mg/L			10/16/18 15:30	1

Client Sample ID: MW-7
Date Collected: 10/11/18 09:35
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			10/17/18 15:18	1
Temperature	22.2	HF	1.0	1.0	Degrees C			10/17/18 15:18	1
Chloride	140		6.0	0.51	mg/L			10/27/18 23:04	2
Fluoride	0.16	J	1.0	0.12	mg/L			10/27/18 23:04	2
Sulfate	3100	B	250	12	mg/L			10/31/18 05:49	50
Total Dissolved Solids (TDS)	5200		40	19	mg/L			10/16/18 15:30	1

Client Sample ID: MW-8
Date Collected: 10/11/18 12:20
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8
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			10/17/18 15:09	1
Temperature	21.7	HF	1.0	1.0	Degrees C			10/17/18 15:09	1
Chloride	230		15	1.3	mg/L			10/28/18 00:19	5
Fluoride	ND		2.5	0.30	mg/L			10/28/18 00:19	5
Sulfate	5400	B	250	12	mg/L			10/31/18 06:06	50
Total Dissolved Solids (TDS)	8200		100	47	mg/L			10/16/18 15:30	1

Client Sample ID: MW-8EB
Date Collected: 10/11/18 12:40
Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.3	HF	0.1	0.1	SU			10/17/18 15:14	1
Temperature	22.0	HF	1.0	1.0	Degrees C			10/17/18 15:14	1
Chloride	ND		3.0	0.25	mg/L			10/28/18 00:56	1
Fluoride	ND		0.50	0.060	mg/L			10/28/18 00:56	1
Sulfate	0.27	J	5.0	0.23	mg/L			10/28/18 00:56	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/18/18 20:26	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-2

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 350777

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		10/17/18 14:00	10/18/18 10:27	1

Lab Sample ID: LCS 240-350481/2-A
Matrix: Water
Analysis Batch: 350777

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-350481/1-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		10/17/18 14:00	10/19/18 16:27	1

Lab Sample ID: LCS 240-350481/3-A
Matrix: Water
Analysis Batch: 351121

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 350481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	8.99		mg/L		90	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-433929/4
Matrix: Water
Analysis Batch: 433929

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-435201/6
Matrix: Water
Analysis Batch: 435201

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			10/27/18 11:51	1
Fluoride	ND		0.50	0.060	mg/L			10/27/18 11:51	1
Sulfate	ND		5.0	0.23	mg/L			10/27/18 11:51	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-2

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

Lab Sample ID: LCS 280-435201/4

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	5.04		mg/L		101	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-435201/5

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	100		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.06		mg/L		101	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-435201/3

Matrix: Water

Analysis Batch: 435201

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.61	J	mg/L		105	50 - 150
Fluoride	0.200	0.194	J	mg/L		97	50 - 150
Sulfate	2.50	2.71	J	mg/L		108	50 - 150

Lab Sample ID: MB 280-435513/13

Matrix: Water

Analysis Batch: 435513

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.450	J	3.0	0.25	mg/L			10/30/18 13:39	1
Fluoride	ND		0.50	0.060	mg/L			10/30/18 13:39	1
Sulfate	0.470	J	5.0	0.23	mg/L			10/30/18 13:39	1

Lab Sample ID: LCS 280-435513/11

Matrix: Water

Analysis Batch: 435513

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.9		mg/L		100	90 - 110
Fluoride	5.00	4.72		mg/L		94	90 - 110
Sulfate	100	99.8		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-435513/12

Matrix: Water

Analysis Batch: 435513

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	99.8		mg/L		100	90 - 110	0	10
Fluoride	5.00	4.69		mg/L		94	90 - 110	1	10
Sulfate	100	99.7		mg/L		100	90 - 110	0	10

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-115507-2

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

Lab Sample ID: MRL 280-435513/10

Matrix: Water

Analysis Batch: 435513

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	2.29	J	mg/L		92	50 - 150
Fluoride	0.200	0.228	J	mg/L		114	50 - 150
Sulfate	2.50	2.23	J	mg/L		89	50 - 150

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

Lab Sample ID: MB 280-433648/1

Matrix: Water

Analysis Batch: 433648

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/16/18 15:30	1

Lab Sample ID: LCS 280-433648/2

Matrix: Water

Analysis Batch: 433648

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	476		mg/L		95	86 - 110

Lab Sample ID: MB 280-434060/1

Matrix: Water

Analysis Batch: 434060

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			10/18/18 20:26	1

Lab Sample ID: LCS 280-434060/2

Matrix: Water

Analysis Batch: 434060

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	489		mg/L		98	86 - 110

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-115507-2

Metals

Prep Batch: 350481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total Recoverable	Water	3005A	
280-115507-7	MW-7	Total Recoverable	Water	3005A	
280-115507-8	MW-8	Total Recoverable	Water	3005A	
280-115507-9	MW-8EB	Total Recoverable	Water	3005A	
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-350481/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 350777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total Recoverable	Water	6010C	350481
280-115507-7	MW-7	Total Recoverable	Water	6010C	350481
280-115507-8	MW-8	Total Recoverable	Water	6010C	350481
280-115507-9	MW-8EB	Total Recoverable	Water	6010C	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6010C	350481
LCS 240-350481/2-A	Lab Control Sample	Total Recoverable	Water	6010C	350481

Analysis Batch: 351121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total Recoverable	Water	6020A	350481
280-115507-7	MW-7	Total Recoverable	Water	6020A	350481
280-115507-8	MW-8	Total Recoverable	Water	6020A	350481
280-115507-9	MW-8EB	Total Recoverable	Water	6020A	350481
MB 240-350481/1-A	Method Blank	Total Recoverable	Water	6020A	350481
LCS 240-350481/3-A	Lab Control Sample	Total Recoverable	Water	6020A	350481

General Chemistry

Analysis Batch: 433648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total/NA	Water	SM 2540C	
280-115507-7	MW-7	Total/NA	Water	SM 2540C	
280-115507-8	MW-8	Total/NA	Water	SM 2540C	
MB 280-433648/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-433648/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 433929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total/NA	Water	9040B	
280-115507-7	MW-7	Total/NA	Water	9040B	
280-115507-8	MW-8	Total/NA	Water	9040B	
280-115507-9	MW-8EB	Total/NA	Water	9040B	
LCS 280-433929/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 434060

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-9	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-434060/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-434060/2	Lab Control Sample	Total/NA	Water	SM 2540C	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-115507-2

General Chemistry (Continued)

Analysis Batch: 435201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total/NA	Water	9056A	
280-115507-7	MW-7	Total/NA	Water	9056A	
280-115507-8	MW-8	Total/NA	Water	9056A	
280-115507-9	MW-8EB	Total/NA	Water	9056A	
MB 280-435201/6	Method Blank	Total/NA	Water	9056A	
LCS 280-435201/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435201/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435201/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 435513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-115507-6	MW-6	Total/NA	Water	9056A	
280-115507-7	MW-7	Total/NA	Water	9056A	
280-115507-8	MW-8	Total/NA	Water	9056A	
MB 280-435513/13	Method Blank	Total/NA	Water	9056A	
LCS 280-435513/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-435513/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-435513/10	Lab Control Sample	Total/NA	Water	9056A	

Lab Chronicle

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

TestAmerica Job ID: 280-115507-2

Client Sample ID: MW-6

Date Collected: 10/11/18 10:30

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-6

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			350777	10/18/18 13:54	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 16:55	DSH	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 14:54	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 05:31	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435201	10/27/18 22:27	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN

Client Sample ID: MW-7

Date Collected: 10/11/18 09:35

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-7

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	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		5			350777	10/18/18 13:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:02	DSH	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:18	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 05:49	A1D	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	435201	10/27/18 23:04	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN

Client Sample ID: MW-8

Date Collected: 10/11/18 12:20

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:10	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:04	DSH	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:09	SGB	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	435513	10/31/18 06:06	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	435201	10/28/18 00:19	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	433648	10/16/18 15:30	VB	TAL DEN

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-115507-2

Client Sample ID: MW-8EB

Date Collected: 10/11/18 12:40

Date Received: 10/12/18 14:15

Lab Sample ID: 280-115507-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1			350777	10/18/18 13:23	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	350481	10/17/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1			351121	10/19/18 17:06	DSH	TAL CAN
Total/NA	Analysis	9040B		1			433929	10/17/18 15:14	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	435201	10/28/18 00:56	ARM	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	434060	10/18/18 20:26	VB	TAL DEN

Laboratory References:

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

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-115507-2

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19 *
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19 *
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19 *
West Virginia DEP	State Program	3	210	12-31-18 *

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

TestAmerica Denver

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

Chain of Custody Record

TestAmerica
1001 15th St. Suite 1000
Denver, CO 80202

Client Information		Sample: TARA Kent	Lab No.: 280-77542-25460-1
Client Contact: Anna Lundin		Phone: 720 933 7496	E-Mail: stephanie.rollmeyer@testamericadeno.com
Company: HDR Inc		Carrier Tracking No.:	

Address: 9781 S. Meridian Blvd Suite 400		Date Date Requested:	Analysis Requested
City: Englewood		TAT Requested (days):	
State: CO 80112		PO #:	
Phone: 724 263 7136 (tel)		MO #:	
Email: anna.lundin@hdrinc.com		Project #:	
Project Name: Xcel Energy GW CCR Monitoring - Hayden		Project #:	
Site: Colorado		SSOWS:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab, B=Batch, A=Ali)	Matrix (Water, Soil, Sludge, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C - Total Dissolved Solids (TDS)	6010C, 6020A, 1470A	9040B, 9056A, 28D	2540D - Total Suspended Solids	9315, Ra226, 9320, Ra228	Total Number of Containers	Special Instructions/Note:
W-1	10.10.18	1510	G	Water	☒	☒							
W-2	10.10.18	1410	G	Water	☒	☒							
W-3	10.10.18	1625	G	Water	☒	☒							
W-4	10.10.18	1300	G	Water	☒	☒							
Field Duplicate W-4D	10.10.18	1300	G	Water	☒	☒							
Equipment Blank				Water									
MW-6	10.11.18	1030	G	Water	☒	☒							
MW-7	10.11.18	0935	G	Water	☒	☒							
MW-8	10.11.18	1220	G	Water	☒	☒							
MW-8EB	10.11.18	1240	G	Water	☒	☒							



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	☐ Dispose By Lab ☐ Archive For Months
Deliverable Requested: I, II, III, IV, Other (Specify):		Special Instructions/OC Requirements:	
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: TARA Kent	Date/Time: 10.12.18 1415	Company: HDR	Received by: Anna Lundin
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:
Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.:	Custody Temp/Seals/C and Other Remarks: 31.36 to 0.71e 17	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-115507-2

Login Number: 115507

List Source: TestAmerica Denver

List Number: 1

Creator: Diffendall, Jessica L

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-116939-1

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

For:

HDR Inc

1670 Broadway, Suite 3400

Denver, Colorado 80202

Attn: Molly Reeves

Darlene Bandy

Authorized for release by:

12/17/2018 4:43:31 PM

Darlene Bandy, Project Manager I

(303)736-0188

darlene.bandy@testamericainc.com

LINKS

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results through

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www.testamericainc.com

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 280-116939-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

TestAmerica Job ID: 280-116939-1

Job ID: 280-116939-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-116939-1

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

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

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

RECEIPT

The samples were received on 11/14/2018 9:26 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.7° C, 1.4° C and 2.2° C.

TOTAL RECOVERABLE METALS

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 11/20/2018 and analyzed on 11/23/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/20/2018 and analyzed on 11/21/2018.

Calcium failed the recovery criteria low for the MS/MSD of sample W-1 (280-116939-1) in batch 240-356632. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details. The acceptable LCS data indicate that the analytical system was operating within control.

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

TOTAL MERCURY

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 11/20/2018 and analyzed on 11/21/2018.

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

TOTAL DISSOLVED SOLIDS

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 11/15/2018 and

Case Narrative

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

TestAmerica Job ID: 280-116939-1

Job ID: 280-116939-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

11/19/2018.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 11/16/2018.

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

CORROSIVITY (PH)

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 12/05/2018 and 12/06/2018.

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

ANIONS (28 DAYS)

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 11/30/2018.

Samples W-1 (280-116939-1)[2X], W-1 (280-116939-1)[20X], W-2 (280-116939-2)[2X], W-2 (280-116939-2)[50X], W-3 (280-116939-3)[5X], W-3 (280-116939-3)[50X], W-4 (280-116939-4)[100X], W-4 (280-116939-4)[5X], W-1D (280-116939-5)[2X] and W-1D (280-116939-5)[20X] required dilution prior to analysis dilution due to the Matrix Conductivity Threshold (MCT) of the instrument for Fluoride and/or analyte concentration. 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 W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 11/20/2018 and analyzed on 12/12/2018.

The following samples were prepared at a reduced aliquot due to limited volume: W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6).

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

RADIUM-228

Samples W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 11/20/2018 and analyzed on 12/10/2018.

The following samples were prepared at a reduced aliquot due to limited volume: W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6).

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 W-1 (280-116939-1), W-2 (280-116939-2), W-3 (280-116939-3), W-4 (280-116939-4), W-1D (280-116939-5) and W-3EB (280-116939-6) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 12/17/2018.

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

Detection Summary

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

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-1

Lab Sample ID: 280-116939-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.62		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0093		0.0050	0.0022	mg/L	1			6020A	Recoverable
Beryllium	0.0011		0.0010	0.00031	mg/L	1			6020A	Total
Calcium	300		1.0	0.58	mg/L	1			6020A	Recoverable
Cadmium	0.00037	J	0.0010	0.00021	mg/L	1			6020A	Total
Cobalt	0.00095	J	0.0010	0.00019	mg/L	1			6020A	Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1			6020A	Total
Selenium	0.010		0.0050	0.00089	mg/L	1			6020A	Recoverable
Lithium	0.28		0.0080	0.0017	mg/L	1			6020A	Total
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1			9040B	Recoverable
Temperature	21.0	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	41		6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.32	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	2700		100	4.6	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4300		40	19	mg/L	1			SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-116939-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	9.3		0.10	0.023	mg/L	1			6010C	Total
Barium	0.0057		0.0050	0.0022	mg/L	1			6020A	Recoverable
Calcium	320		1.0	0.58	mg/L	1			6020A	Total
Cobalt	0.0013		0.0010	0.00019	mg/L	1			6020A	Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1			6020A	Total
Selenium	0.0028	J	0.0050	0.00089	mg/L	1			6020A	Recoverable
Lithium	0.62		0.0080	0.0017	mg/L	1			6020A	Total
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1			9040B	Recoverable
Temperature	20.9	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	83		6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.52	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	4700		250	12	mg/L	50			9056A	Total/NA
Total Dissolved Solids (TDS)	7000		40	19	mg/L	1			SM 2540C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-116939-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.81		0.10	0.023	mg/L	1			6010C	Total
										Recoverable

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

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

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-3 (Continued)

Lab Sample ID: 280-116939-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0061		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	230		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cadmium	0.00029	J	0.0010	0.00021	mg/L	1		6020A	Total Recoverable
Cobalt	0.0021		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0028	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0094		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	1.2		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.58	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	8100		250	12	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	12000		100	47	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: W-4

Lab Sample ID: 280-116939-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.96		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0077		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	320		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0069		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0028	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0016	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Lithium	0.71		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	360		15	1.3	mg/L	5		9056A	Total/NA
Fluoride	0.65	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	13000		500	23	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	19000		100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-1D

Lab Sample ID: 280-116939-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.64		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0091		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	310		1.0	0.58	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 - Hayden

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-1D (Continued)

Lab Sample ID: 280-116939-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Cobalt	0.00075	J	0.0010	0.00019	mg/L	1			6020A	Total Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1			6020A	Total Recoverable
Selenium	0.0089		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
Lithium	0.28		0.0080	0.0017	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	22.1	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	41		6.0	0.51	mg/L	2			9056A	Total/NA
Fluoride	0.28	J	1.0	0.12	mg/L	2			9056A	Total/NA
Sulfate	2700		100	4.6	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4200		40	19	mg/L	1			SM 2540C	Total/NA

Client Sample ID: W-3EB

Lab Sample ID: 280-116939-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Lithium	0.0026	J	0.0080	0.0017	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	21.0	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Sulfate	0.26	J	5.0	0.23	mg/L	1			9056A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

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

TestAmerica Job ID: 280-116939-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

TestAmerica Job ID: 280-116939-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116939-1	W-1	Water	11/13/18 10:00	11/14/18 09:26
280-116939-2	W-2	Water	11/13/18 14:20	11/14/18 09:26
280-116939-3	W-3	Water	11/13/18 12:20	11/14/18 09:26
280-116939-4	W-4	Water	11/13/18 13:30	11/14/18 09:26
280-116939-5	W-1D	Water	11/13/18 10:00	11/14/18 09:26
280-116939-6	W-3EB	Water	11/13/18 12:35	11/14/18 09:26

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.62		0.10	0.023	mg/L	-	11/20/18 14:00	11/23/18 17:48	1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	9.3		0.10	0.023	mg/L	-	11/20/18 14:00	11/23/18 18:18	1

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.81		0.10	0.023	mg/L	-	11/20/18 14:00	11/23/18 18:23	1

Client Sample ID: W-4
Date Collected: 11/13/18 13:30
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.96		0.10	0.023	mg/L	-	11/20/18 14:00	11/23/18 18:28	1

Client Sample ID: W-1D
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.64		0.10	0.023	mg/L	-	11/20/18 14:00	11/23/18 18:32	1

Client Sample ID: W-3EB
Date Collected: 11/13/18 12:35
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L	-	11/20/18 14:00	11/23/18 18:37	1

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

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Arsenic	ND		0.0050	0.00075	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Barium	0.0093		0.0050	0.0022	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Beryllium	0.0011		0.0010	0.00031	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Calcium	300		1.0	0.58	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Cadmium	0.00037	J	0.0010	0.00021	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Cobalt	0.00095	J	0.0010	0.00019	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Chromium	ND		0.0020	0.00098	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Lead	ND		0.0010	0.00045	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Selenium	0.010		0.0050	0.00089	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Thallium	ND		0.0010	0.00020	mg/L	-	11/20/18 14:00	11/21/18 13:02	1
Lithium	0.28		0.0080	0.0017	mg/L	-	11/20/18 14:00	11/21/18 13:02	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/20/18 14:00	11/21/18 13:31	1
Arsenic	ND		0.0050	0.00075	mg/L		11/20/18 14:00	11/21/18 13:31	1
Barium	0.0057		0.0050	0.0022	mg/L		11/20/18 14:00	11/21/18 13:31	1
Beryllium	ND		0.0010	0.00031	mg/L		11/20/18 14:00	11/21/18 13:31	1
Calcium	320		1.0	0.58	mg/L		11/20/18 14:00	11/21/18 13:31	1
Cadmium	ND		0.0010	0.00021	mg/L		11/20/18 14:00	11/21/18 13:31	1
Cobalt	0.0013		0.0010	0.00019	mg/L		11/20/18 14:00	11/21/18 13:31	1
Chromium	ND		0.0020	0.00098	mg/L		11/20/18 14:00	11/21/18 13:31	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L		11/20/18 14:00	11/21/18 13:31	1
Lead	ND		0.0010	0.00045	mg/L		11/20/18 14:00	11/21/18 13:31	1
Selenium	0.0028	J	0.0050	0.00089	mg/L		11/20/18 14:00	11/21/18 13:31	1
Thallium	ND		0.0010	0.00020	mg/L		11/20/18 14:00	11/21/18 13:31	1
Lithium	0.62		0.0080	0.0017	mg/L		11/20/18 14:00	11/21/18 13:31	1

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/20/18 14:00	11/21/18 13:33	1
Arsenic	ND		0.0050	0.00075	mg/L		11/20/18 14:00	11/21/18 13:33	1
Barium	0.0061		0.0050	0.0022	mg/L		11/20/18 14:00	11/21/18 13:33	1
Beryllium	ND		0.0010	0.00031	mg/L		11/20/18 14:00	11/21/18 13:33	1
Calcium	230		1.0	0.58	mg/L		11/20/18 14:00	11/21/18 13:33	1
Cadmium	0.00029	J	0.0010	0.00021	mg/L		11/20/18 14:00	11/21/18 13:33	1
Cobalt	0.0021		0.0010	0.00019	mg/L		11/20/18 14:00	11/21/18 13:33	1
Chromium	ND		0.0020	0.00098	mg/L		11/20/18 14:00	11/21/18 13:33	1
Molybdenum	0.0028	J	0.010	0.0011	mg/L		11/20/18 14:00	11/21/18 13:33	1
Lead	ND		0.0010	0.00045	mg/L		11/20/18 14:00	11/21/18 13:33	1
Selenium	0.0094		0.0050	0.00089	mg/L		11/20/18 14:00	11/21/18 13:33	1
Thallium	ND		0.0010	0.00020	mg/L		11/20/18 14:00	11/21/18 13:33	1
Lithium	1.2		0.0080	0.0017	mg/L		11/20/18 14:00	11/21/18 13:33	1

Client Sample ID: W-4
Date Collected: 11/13/18 13:30
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/20/18 14:00	11/21/18 13:36	1
Arsenic	ND		0.0050	0.00075	mg/L		11/20/18 14:00	11/21/18 13:36	1
Barium	0.0077		0.0050	0.0022	mg/L		11/20/18 14:00	11/21/18 13:36	1
Beryllium	ND		0.0010	0.00031	mg/L		11/20/18 14:00	11/21/18 13:36	1
Calcium	320		1.0	0.58	mg/L		11/20/18 14:00	11/21/18 13:36	1
Cadmium	ND		0.0010	0.00021	mg/L		11/20/18 14:00	11/21/18 13:36	1
Cobalt	0.0069		0.0010	0.00019	mg/L		11/20/18 14:00	11/21/18 13:36	1
Chromium	ND		0.0020	0.00098	mg/L		11/20/18 14:00	11/21/18 13:36	1
Molybdenum	0.0028	J	0.010	0.0011	mg/L		11/20/18 14:00	11/21/18 13:36	1
Lead	ND		0.0010	0.00045	mg/L		11/20/18 14:00	11/21/18 13:36	1
Selenium	0.0016	J	0.0050	0.00089	mg/L		11/20/18 14:00	11/21/18 13:36	1
Thallium	ND		0.0010	0.00020	mg/L		11/20/18 14:00	11/21/18 13:36	1
Lithium	0.71		0.0080	0.0017	mg/L		11/20/18 14:00	11/21/18 13:36	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Client Sample ID: W-1D
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/20/18 14:00	11/21/18 13:38	1
Arsenic	ND		0.0050	0.00075	mg/L		11/20/18 14:00	11/21/18 13:38	1
Barium	0.0091		0.0050	0.0022	mg/L		11/20/18 14:00	11/21/18 13:38	1
Beryllium	ND		0.0010	0.00031	mg/L		11/20/18 14:00	11/21/18 13:38	1
Calcium	310		1.0	0.58	mg/L		11/20/18 14:00	11/21/18 13:38	1
Cadmium	ND		0.0010	0.00021	mg/L		11/20/18 14:00	11/21/18 13:38	1
Cobalt	0.00075	J	0.0010	0.00019	mg/L		11/20/18 14:00	11/21/18 13:38	1
Chromium	ND		0.0020	0.00098	mg/L		11/20/18 14:00	11/21/18 13:38	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		11/20/18 14:00	11/21/18 13:38	1
Lead	ND		0.0010	0.00045	mg/L		11/20/18 14:00	11/21/18 13:38	1
Selenium	0.0089		0.0050	0.00089	mg/L		11/20/18 14:00	11/21/18 13:38	1
Thallium	ND		0.0010	0.00020	mg/L		11/20/18 14:00	11/21/18 13:38	1
Lithium	0.28		0.0080	0.0017	mg/L		11/20/18 14:00	11/21/18 13:38	1

Client Sample ID: W-3EB
Date Collected: 11/13/18 12:35
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/20/18 14:00	11/21/18 13:40	1
Arsenic	ND		0.0050	0.00075	mg/L		11/20/18 14:00	11/21/18 13:40	1
Barium	ND		0.0050	0.0022	mg/L		11/20/18 14:00	11/21/18 13:40	1
Beryllium	ND		0.0010	0.00031	mg/L		11/20/18 14:00	11/21/18 13:40	1
Calcium	ND		1.0	0.58	mg/L		11/20/18 14:00	11/21/18 13:40	1
Cadmium	ND		0.0010	0.00021	mg/L		11/20/18 14:00	11/21/18 13:40	1
Cobalt	ND		0.0010	0.00019	mg/L		11/20/18 14:00	11/21/18 13:40	1
Chromium	ND		0.0020	0.00098	mg/L		11/20/18 14:00	11/21/18 13:40	1
Molybdenum	ND		0.010	0.0011	mg/L		11/20/18 14:00	11/21/18 13:40	1
Lead	ND		0.0010	0.00045	mg/L		11/20/18 14:00	11/21/18 13:40	1
Selenium	ND		0.0050	0.00089	mg/L		11/20/18 14:00	11/21/18 13:40	1
Thallium	ND		0.0010	0.00020	mg/L		11/20/18 14:00	11/21/18 13:40	1
Lithium	0.0026	J	0.0080	0.0017	mg/L		11/20/18 14:00	11/21/18 13:40	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 11:55	1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 11:57	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 12:59	1

Client Sample ID: W-4
Date Collected: 11/13/18 13:30
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 13:01	1

Client Sample ID: W-1D
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 13:03	1

Client Sample ID: W-3EB
Date Collected: 11/13/18 12:35
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 13:05	1

General Chemistry

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
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			12/05/18 21:24	1
Temperature	21.0	HF	1.0	1.0	Degrees C			12/05/18 21:24	1
Chloride	41		6.0	0.51	mg/L			11/30/18 02:25	2
Fluoride	0.32	J	1.0	0.12	mg/L			11/30/18 02:25	2
Sulfate	2700		100	4.6	mg/L			11/30/18 02:44	20
Total Dissolved Solids (TDS)	4300		40	19	mg/L			11/15/18 10:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/16/18 10:14	1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
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			12/05/18 21:49	1
Temperature	20.9	HF	1.0	1.0	Degrees C			12/05/18 21:49	1
Chloride	83		6.0	0.51	mg/L			11/30/18 03:03	2
Fluoride	0.52	J	1.0	0.12	mg/L			11/30/18 03:03	2
Sulfate	4700		250	12	mg/L			11/30/18 03:21	50
Total Dissolved Solids (TDS)	7000		40	19	mg/L			11/15/18 10:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/16/18 10:14	1

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			12/05/18 21:44	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

General Chemistry (Continued)

Client Sample ID: W-3

Date Collected: 11/13/18 12:20

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Temperature	21.5	HF	1.0	1.0	Degrees C			12/05/18 21:44	1
Chloride	190		15	1.3	mg/L			11/30/18 04:18	5
Fluoride	0.58	J	2.5	0.30	mg/L			11/30/18 04:18	5
Sulfate	8100		250	12	mg/L			11/30/18 04:36	50
Total Dissolved Solids (TDS)	12000		100	47	mg/L			11/15/18 10:11	1
Total Suspended Solids	3.2	J	4.0	1.1	mg/L			11/16/18 10:14	1

Client Sample ID: W-4

Date Collected: 11/13/18 13:30

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			12/05/18 21:15	1
Temperature	20.8	HF	1.0	1.0	Degrees C			12/05/18 21:15	1
Chloride	360		15	1.3	mg/L			11/30/18 04:55	5
Fluoride	0.65	J	2.5	0.30	mg/L			11/30/18 04:55	5
Sulfate	13000		500	23	mg/L			11/30/18 05:14	100
Total Dissolved Solids (TDS)	19000		100	47	mg/L			11/15/18 10:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/16/18 10:14	1

Client Sample ID: W-1D

Date Collected: 11/13/18 10:00

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5

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			12/05/18 21:40	1
Temperature	22.1	HF	1.0	1.0	Degrees C			12/05/18 21:40	1
Chloride	41		6.0	0.51	mg/L			11/30/18 05:32	2
Fluoride	0.28	J	1.0	0.12	mg/L			11/30/18 05:32	2
Sulfate	2700		100	4.6	mg/L			11/30/18 05:51	20
Total Dissolved Solids (TDS)	4200		40	19	mg/L			11/15/18 10:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/16/18 10:14	1

Client Sample ID: W-3EB

Date Collected: 11/13/18 12:35

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6

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			12/06/18 13:38	1
Temperature	21.0	HF	1.0	1.0	Degrees C			12/06/18 13:38	1
Chloride	ND		3.0	0.25	mg/L			11/30/18 06:10	1
Fluoride	ND		0.50	0.060	mg/L			11/30/18 06:10	1
Sulfate	0.26	J	5.0	0.23	mg/L			11/30/18 06:10	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			11/19/18 09:52	1
Total Suspended Solids	ND		4.0	1.1	mg/L			11/16/18 10:14	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.125	U	0.140	0.140	1.00	0.224	pCi/L	11/20/18 12:49	12/12/18 07:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					11/20/18 12:49	12/12/18 07:16	1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0919	U	0.124	0.124	1.00	0.209	pCi/L	11/20/18 12:49	12/12/18 07:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					11/20/18 12:49	12/12/18 07:16	1

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.167	U	0.135	0.136	1.00	0.191	pCi/L	11/20/18 12:49	12/12/18 07:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					11/20/18 12:49	12/12/18 07:16	1

Client Sample ID: W-4
Date Collected: 11/13/18 13:30
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.131	U	0.123	0.124	1.00	0.184	pCi/L	11/20/18 12:49	12/12/18 07:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					11/20/18 12:49	12/12/18 07:19	1

Client Sample ID: W-1D
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.101	U	0.126	0.126	1.00	0.208	pCi/L	11/20/18 12:49	12/12/18 07:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					11/20/18 12:49	12/12/18 07:19	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-3EB
Date Collected: 11/13/18 12:35
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00827	U	0.0772	0.0772	1.00	0.171	pCi/L	11/20/18 12:49	12/12/18 07:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					11/20/18 12:49	12/12/18 07:19	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.359	U	0.283	0.285	1.00	0.445	pCi/L	11/20/18 14:23	12/10/18 08:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					11/20/18 14:23	12/10/18 08:33	1
Y Carrier	79.3		40 - 110					11/20/18 14:23	12/10/18 08:33	1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.629		0.299	0.304	1.00	0.431	pCi/L	11/20/18 14:23	12/10/18 08:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					11/20/18 14:23	12/10/18 08:33	1
Y Carrier	84.1		40 - 110					11/20/18 14:23	12/10/18 08:33	1

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.461		0.289	0.292	1.00	0.441	pCi/L	11/20/18 14:23	12/10/18 08:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					11/20/18 14:23	12/10/18 08:33	1
Y Carrier	80.0		40 - 110					11/20/18 14:23	12/10/18 08:33	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 11/13/18 13:30
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.415	U	0.317	0.319	1.00	0.499	pCi/L	11/20/18 14:23	12/10/18 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					11/20/18 14:23	12/10/18 08:35	1
Y Carrier	82.2		40 - 110					11/20/18 14:23	12/10/18 08:35	1

Client Sample ID: W-1D
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.610		0.316	0.321	1.00	0.467	pCi/L	11/20/18 14:23	12/10/18 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					11/20/18 14:23	12/10/18 08:35	1
Y Carrier	81.9		40 - 110					11/20/18 14:23	12/10/18 08:35	1

Client Sample ID: W-3EB
Date Collected: 11/13/18 12:35
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.104	U	0.300	0.301	1.00	0.522	pCi/L	11/20/18 14:23	12/10/18 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					11/20/18 14:23	12/10/18 08:35	1
Y Carrier	72.9		40 - 110					11/20/18 14:23	12/10/18 08:35	1

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

Client Sample ID: W-1
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.485		0.316	0.318	5.00	0.445	pCi/L		12/17/18 16:03	1

Client Sample ID: W-2
Date Collected: 11/13/18 14:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.721		0.324	0.328	5.00	0.431	pCi/L		12/17/18 16:03	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Client Sample ID: W-3
Date Collected: 11/13/18 12:20
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.628		0.319	0.322	5.00	0.441	pCi/L		12/17/18 16:03	1

Client Sample ID: W-4
Date Collected: 11/13/18 13:30
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.546		0.340	0.342	5.00	0.499	pCi/L		12/17/18 16:03	1

Client Sample ID: W-1D
Date Collected: 11/13/18 10:00
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.711		0.340	0.345	5.00	0.467	pCi/L		12/17/18 16:03	1

Client Sample ID: W-3EB
Date Collected: 11/13/18 12:35
Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.112	U	0.310	0.311	5.00	0.522	pCi/L		12/17/18 16:03	1

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-356334/1-A
Matrix: Water
Analysis Batch: 356857

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 356334

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		11/20/18 14:00	11/23/18 17:39	1

Lab Sample ID: LCS 240-356334/2-A
Matrix: Water
Analysis Batch: 356857

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 356334

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.989		mg/L		99	80 - 120

Lab Sample ID: 280-116939-1 MS
Matrix: Water
Analysis Batch: 356857

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 356334

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.62		1.00	1.67		mg/L		104	75 - 125

Lab Sample ID: 280-116939-1 MSD
Matrix: Water
Analysis Batch: 356857

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 356334

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.62		1.00	1.66		mg/L		103	75 - 125	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-356334/1-A
Matrix: Water
Analysis Batch: 356632

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 356334

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		11/20/18 14:00	11/21/18 12:58	1
Arsenic	ND		0.0050	0.00075	mg/L		11/20/18 14:00	11/21/18 12:58	1
Barium	ND		0.0050	0.0022	mg/L		11/20/18 14:00	11/21/18 12:58	1
Beryllium	ND		0.0010	0.00031	mg/L		11/20/18 14:00	11/21/18 12:58	1
Calcium	ND		1.0	0.58	mg/L		11/20/18 14:00	11/21/18 12:58	1
Cadmium	ND		0.0010	0.00021	mg/L		11/20/18 14:00	11/21/18 12:58	1
Cobalt	ND		0.0010	0.00019	mg/L		11/20/18 14:00	11/21/18 12:58	1
Chromium	ND		0.0020	0.00098	mg/L		11/20/18 14:00	11/21/18 12:58	1
Molybdenum	ND		0.010	0.0011	mg/L		11/20/18 14:00	11/21/18 12:58	1
Lead	ND		0.0010	0.00045	mg/L		11/20/18 14:00	11/21/18 12:58	1
Selenium	ND		0.0050	0.00089	mg/L		11/20/18 14:00	11/21/18 12:58	1
Thallium	ND		0.0010	0.00020	mg/L		11/20/18 14:00	11/21/18 12:58	1
Lithium	ND		0.0080	0.0017	mg/L		11/20/18 14:00	11/21/18 12:58	1

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Lab Sample ID: LCS 240-356334/3-A

Matrix: Water

Analysis Batch: 356632

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 356334

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	0.100	0.0939		mg/L		94	80 - 120
Arsenic	1.00	0.874		mg/L		87	80 - 120
Barium	1.00	0.912		mg/L		91	80 - 120
Beryllium	1.00	0.950		mg/L		95	80 - 120
Calcium	10.0	9.10		mg/L		91	80 - 120
Cadmium	1.00	0.911		mg/L		91	80 - 120
Cobalt	1.00	0.882		mg/L		88	80 - 120
Chromium	1.00	0.903		mg/L		90	80 - 120
Molybdenum	0.100	0.0934		mg/L		93	80 - 120
Lead	1.00	0.942		mg/L		94	80 - 120
Selenium	1.00	0.926		mg/L		93	80 - 120
Thallium	0.250	0.231		mg/L		93	80 - 120
Lithium	0.100	0.0964		mg/L		96	80 - 120

Lab Sample ID: 280-116939-1 MS

Matrix: Water

Analysis Batch: 356632

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 356334

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND		0.100	0.0906		mg/L		91	75 - 125
Arsenic	ND		1.00	0.893		mg/L		89	75 - 125
Barium	0.0093		1.00	0.888		mg/L		88	75 - 125
Beryllium	0.0011		1.00	0.935		mg/L		93	75 - 125
Calcium	300		10.0	288	4	mg/L		-135	75 - 125
Cadmium	0.00037	J	1.00	0.841		mg/L		84	75 - 125
Cobalt	0.00095	J	1.00	0.871		mg/L		87	75 - 125
Chromium	ND		1.00	0.825		mg/L		83	75 - 125
Molybdenum	0.0034	J	0.100	0.0990		mg/L		96	75 - 125
Lead	ND		1.00	0.847		mg/L		85	75 - 125
Selenium	0.010		1.00	0.862		mg/L		85	75 - 125
Thallium	ND		0.250	0.209		mg/L		84	75 - 125
Lithium	0.28		0.100	0.354		mg/L		77	75 - 125

Lab Sample ID: 280-116939-1 MSD

Matrix: Water

Analysis Batch: 356632

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 356334

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	ND		0.100	0.0946		mg/L		95	75 - 125	4	20
Arsenic	ND		1.00	0.936		mg/L		94	75 - 125	5	20
Barium	0.0093		1.00	0.928		mg/L		92	75 - 125	4	20
Beryllium	0.0011		1.00	0.970		mg/L		97	75 - 125	4	20
Calcium	300		10.0	301	4	mg/L		3	75 - 125	5	20
Cadmium	0.00037	J	1.00	0.893		mg/L		89	75 - 125	6	20
Cobalt	0.00095	J	1.00	0.920		mg/L		92	75 - 125	6	20
Chromium	ND		1.00	0.858		mg/L		86	75 - 125	4	20
Molybdenum	0.0034	J	0.100	0.104		mg/L		100	75 - 125	5	20
Lead	ND		1.00	0.881		mg/L		88	75 - 125	4	20

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Lab Sample ID: 280-116939-1 MSD

Matrix: Water

Analysis Batch: 356632

Client Sample ID: W-1
Prep Type: Total Recoverable

Prep Batch: 356334

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Selenium	0.010		1.00	0.888		mg/L		88	75 - 125	3	20
Thallium	ND		0.250	0.219		mg/L		88	75 - 125	5	20
Lithium	0.28		0.100	0.379		mg/L		102	75 - 125	7	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-356339/1-A

Matrix: Water

Analysis Batch: 356610

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 356339

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		11/20/18 14:00	11/21/18 11:46	1

Lab Sample ID: LCS 240-356339/2-A

Matrix: Water

Analysis Batch: 356610

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 356339

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.67		ug/L		93	80 - 120

Lab Sample ID: 280-116939-2 MS

Matrix: Water

Analysis Batch: 356610

Client Sample ID: W-2

Prep Type: Total/NA

Prep Batch: 356339

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		1.00	0.959		ug/L		96	80 - 120

Lab Sample ID: 280-116939-2 MSD

Matrix: Water

Analysis Batch: 356610

Client Sample ID: W-2

Prep Type: Total/NA

Prep Batch: 356339

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		1.00	0.907		ug/L		91	80 - 120	6	20

Method: 9040B - pH

Lab Sample ID: LCS 280-440159/4

Matrix: Water

Analysis Batch: 440159

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 280-440228/4

Matrix: Water

Analysis Batch: 440228

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

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-439229/6

Matrix: Water

Analysis Batch: 439229

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	0.25	mg/L			11/29/18 13:32	1
Fluoride	ND		0.50	0.060	mg/L			11/29/18 13:32	1
Sulfate	ND		5.0	0.23	mg/L			11/29/18 13:32	1

Lab Sample ID: LCS 280-439229/4

Matrix: Water

Analysis Batch: 439229

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.6		mg/L		100	90 - 110
Fluoride	5.00	5.28		mg/L		106	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-439229/5

Matrix: Water

Analysis Batch: 439229

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	99.7		mg/L		100	90 - 110	0	10
Fluoride	5.00	5.27		mg/L		105	90 - 110	0	10
Sulfate	100	102		mg/L		102	90 - 110	0	10

Lab Sample ID: MRL 280-439229/3

Matrix: Water

Analysis Batch: 439229

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	2.59	J	mg/L		104	50 - 150
Fluoride	0.200	0.198	J	mg/L		99	50 - 150
Sulfate	2.50	2.79	J	mg/L		111	50 - 150

Lab Sample ID: MB 280-439798/6

Matrix: Water

Analysis Batch: 439798

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			12/04/18 15:54	1
Fluoride	ND		0.50	0.060	mg/L			12/04/18 15:54	1
Sulfate	ND		5.0	0.23	mg/L			12/04/18 15:54	1

Lab Sample ID: LCS 280-439798/4

Matrix: Water

Analysis Batch: 439798

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	5.25		mg/L		105	90 - 110
Sulfate	100	103		mg/L		103	90 - 110

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Lab Sample ID: LCSD 280-439798/5
Matrix: Water
Analysis Batch: 439798

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	5.25		mg/L		105	90 - 110	0	10
Sulfate	100	103		mg/L		103	90 - 110	0	10

Lab Sample ID: MRL 280-439798/3
Matrix: Water
Analysis Batch: 439798

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	2.78	J	mg/L		111	50 - 150		
Fluoride	0.200	0.210	J	mg/L		105	50 - 150		
Sulfate	2.50	2.74	J	mg/L		110	50 - 150		

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

Lab Sample ID: MB 280-437741/1
Matrix: Water
Analysis Batch: 437741

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			11/15/18 10:11	1

Lab Sample ID: LCS 280-437741/2
Matrix: Water
Analysis Batch: 437741

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	500		mg/L		100	93 - 110		

Lab Sample ID: LCSD 280-437741/3
Matrix: Water
Analysis Batch: 437741

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)	500	493		mg/L		99	93 - 110	1	20

Lab Sample ID: MB 280-438116/1
Matrix: Water
Analysis Batch: 438116

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			11/19/18 09:52	1

Lab Sample ID: LCS 280-438116/2
Matrix: Water
Analysis Batch: 438116

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	491		mg/L		98	93 - 110		

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

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

Lab Sample ID: MB 280-437900/1
Matrix: Water
Analysis Batch: 437900

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			11/16/18 10:14	1

Lab Sample ID: LCS 280-437900/2
Matrix: Water
Analysis Batch: 437900

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	85.6		mg/L		86	79 - 114

Lab Sample ID: LCSD 280-437900/3
Matrix: Water
Analysis Batch: 437900

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	102		mg/L		102	79 - 114	18	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-401892/20-A
Matrix: Water
Analysis Batch: 405211

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 401892

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1088	U	0.0965	0.0970	1.00	0.143	pCi/L	11/20/18 12:49	12/12/18 07:19	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	11/20/18 12:49	12/12/18 07:19	1

Lab Sample ID: LCS 160-401892/1-A
Matrix: Water
Analysis Batch: 405210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 401892

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	11.44		1.28	1.00	0.155	pCi/L	101	68 - 137

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	95.6		40 - 110

TestAmerica Denver

QC Sample Results

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

TestAmerica Job ID: 280-116939-1

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-401907/20-A

Matrix: Water

Analysis Batch: 404802

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 401907

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1980	U	0.214	0.215	1.00	0.351	pCi/L	11/20/18 14:23	12/10/18 08:35	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110	11/20/18 14:23	12/10/18 08:35	1
Y Carrier	83.7		40 - 110	11/20/18 14:23	12/10/18 08:35	1

Lab Sample ID: LCS 160-401907/1-A

Matrix: Water

Analysis Batch: 404801

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 401907

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.14	8.489		1.01	1.00	0.380	pCi/L	93	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	95.6		40 - 110
Y Carrier	76.6		40 - 110

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-116939-1

Metals

Prep Batch: 356334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total Recoverable	Water	3005A	
280-116939-2	W-2	Total Recoverable	Water	3005A	
280-116939-3	W-3	Total Recoverable	Water	3005A	
280-116939-4	W-4	Total Recoverable	Water	3005A	
280-116939-5	W-1D	Total Recoverable	Water	3005A	
280-116939-6	W-3EB	Total Recoverable	Water	3005A	
MB 240-356334/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-356334/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-356334/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-116939-1 MS	W-1	Total Recoverable	Water	3005A	
280-116939-1 MS	W-1	Total Recoverable	Water	3005A	
280-116939-1 MSD	W-1	Total Recoverable	Water	3005A	
280-116939-1 MSD	W-1	Total Recoverable	Water	3005A	

Prep Batch: 356339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	7470A	
280-116939-2	W-2	Total/NA	Water	7470A	
280-116939-3	W-3	Total/NA	Water	7470A	
280-116939-4	W-4	Total/NA	Water	7470A	
280-116939-5	W-1D	Total/NA	Water	7470A	
280-116939-6	W-3EB	Total/NA	Water	7470A	
MB 240-356339/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-356339/2-A	Lab Control Sample	Total/NA	Water	7470A	
280-116939-2 MS	W-2	Total/NA	Water	7470A	
280-116939-2 MSD	W-2	Total/NA	Water	7470A	

Analysis Batch: 356610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	7470A	356339
280-116939-2	W-2	Total/NA	Water	7470A	356339
280-116939-3	W-3	Total/NA	Water	7470A	356339
280-116939-4	W-4	Total/NA	Water	7470A	356339
280-116939-5	W-1D	Total/NA	Water	7470A	356339
280-116939-6	W-3EB	Total/NA	Water	7470A	356339
MB 240-356339/1-A	Method Blank	Total/NA	Water	7470A	356339
LCS 240-356339/2-A	Lab Control Sample	Total/NA	Water	7470A	356339
280-116939-2 MS	W-2	Total/NA	Water	7470A	356339
280-116939-2 MSD	W-2	Total/NA	Water	7470A	356339

Analysis Batch: 356632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total Recoverable	Water	6020A	356334
280-116939-2	W-2	Total Recoverable	Water	6020A	356334
280-116939-3	W-3	Total Recoverable	Water	6020A	356334
280-116939-4	W-4	Total Recoverable	Water	6020A	356334
280-116939-5	W-1D	Total Recoverable	Water	6020A	356334
280-116939-6	W-3EB	Total Recoverable	Water	6020A	356334
MB 240-356334/1-A	Method Blank	Total Recoverable	Water	6020A	356334
LCS 240-356334/3-A	Lab Control Sample	Total Recoverable	Water	6020A	356334
280-116939-1 MS	W-1	Total Recoverable	Water	6020A	356334

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-116939-1

Metals (Continued)

Analysis Batch: 356632 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1 MSD	W-1	Total Recoverable	Water	6020A	356334

Analysis Batch: 356857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total Recoverable	Water	6010C	356334
280-116939-2	W-2	Total Recoverable	Water	6010C	356334
280-116939-3	W-3	Total Recoverable	Water	6010C	356334
280-116939-4	W-4	Total Recoverable	Water	6010C	356334
280-116939-5	W-1D	Total Recoverable	Water	6010C	356334
280-116939-6	W-3EB	Total Recoverable	Water	6010C	356334
MB 240-356334/1-A	Method Blank	Total Recoverable	Water	6010C	356334
LCS 240-356334/2-A	Lab Control Sample	Total Recoverable	Water	6010C	356334
280-116939-1 MS	W-1	Total Recoverable	Water	6010C	356334
280-116939-1 MSD	W-1	Total Recoverable	Water	6010C	356334

General Chemistry

Analysis Batch: 437741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	SM 2540C	
280-116939-2	W-2	Total/NA	Water	SM 2540C	
280-116939-3	W-3	Total/NA	Water	SM 2540C	
280-116939-4	W-4	Total/NA	Water	SM 2540C	
280-116939-5	W-1D	Total/NA	Water	SM 2540C	
MB 280-437741/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-437741/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-437741/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 437900

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	SM 2540D	
280-116939-2	W-2	Total/NA	Water	SM 2540D	
280-116939-3	W-3	Total/NA	Water	SM 2540D	
280-116939-4	W-4	Total/NA	Water	SM 2540D	
280-116939-5	W-1D	Total/NA	Water	SM 2540D	
280-116939-6	W-3EB	Total/NA	Water	SM 2540D	
MB 280-437900/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-437900/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-437900/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 438116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-6	W-3EB	Total/NA	Water	SM 2540C	
MB 280-438116/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-438116/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 439229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	9056A	
280-116939-1	W-1	Total/NA	Water	9056A	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-116939-1

General Chemistry (Continued)

Analysis Batch: 439229 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-2	W-2	Total/NA	Water	9056A	
280-116939-2	W-2	Total/NA	Water	9056A	
280-116939-3	W-3	Total/NA	Water	9056A	
280-116939-3	W-3	Total/NA	Water	9056A	
280-116939-4	W-4	Total/NA	Water	9056A	
280-116939-4	W-4	Total/NA	Water	9056A	
280-116939-5	W-1D	Total/NA	Water	9056A	
280-116939-5	W-1D	Total/NA	Water	9056A	
280-116939-6	W-3EB	Total/NA	Water	9056A	
MB 280-439229/6	Method Blank	Total/NA	Water	9056A	
LCS 280-439229/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-439229/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-439229/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 439798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-439798/6	Method Blank	Total/NA	Water	9056A	
LCS 280-439798/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-439798/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-439798/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 440159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	9040B	
280-116939-2	W-2	Total/NA	Water	9040B	
280-116939-3	W-3	Total/NA	Water	9040B	
280-116939-4	W-4	Total/NA	Water	9040B	
280-116939-5	W-1D	Total/NA	Water	9040B	
LCS 280-440159/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 440228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-6	W-3EB	Total/NA	Water	9040B	
LCS 280-440228/4	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 401892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	PrecSep-21	
280-116939-2	W-2	Total/NA	Water	PrecSep-21	
280-116939-3	W-3	Total/NA	Water	PrecSep-21	
280-116939-4	W-4	Total/NA	Water	PrecSep-21	
280-116939-5	W-1D	Total/NA	Water	PrecSep-21	
280-116939-6	W-3EB	Total/NA	Water	PrecSep-21	
MB 160-401892/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-401892/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

TestAmerica Denver

QC Association Summary

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

TestAmerica Job ID: 280-116939-1

Rad (Continued)

Prep Batch: 401907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116939-1	W-1	Total/NA	Water	PrecSep_0	
280-116939-2	W-2	Total/NA	Water	PrecSep_0	
280-116939-3	W-3	Total/NA	Water	PrecSep_0	
280-116939-4	W-4	Total/NA	Water	PrecSep_0	
280-116939-5	W-1D	Total/NA	Water	PrecSep_0	
280-116939-6	W-3EB	Total/NA	Water	PrecSep_0	
MB 160-401907/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-401907/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-1

Date Collected: 11/13/18 10:00

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-1

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	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			356857	11/23/18 17:48	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			356632	11/21/18 13:02	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	356339	11/20/18 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			356610	11/21/18 11:55	AJC	TAL CAN
Total/NA	Analysis	9040B		1			440159	12/05/18 21:24	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	439229	11/30/18 02:25	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	439229	11/30/18 02:44	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	437741	11/15/18 10:11	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437900	11/16/18 10:14	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			749.57 mL	1.0 g	401892	11/20/18 12:49	REG	TAL SL
Total/NA	Analysis	9315		1			405210	12/12/18 07:16	KLS	TAL SL
Total/NA	Prep	PrecSep_0			749.57 mL	1.0 g	401907	11/20/18 14:23	REG	TAL SL
Total/NA	Analysis	9320		1			404801	12/10/18 08:33	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			406213	12/17/18 16:03	RTM	TAL SL

Client Sample ID: W-2

Date Collected: 11/13/18 14:20

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-2

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	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			356857	11/23/18 18:18	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			356632	11/21/18 13:31	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	356339	11/20/18 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			356610	11/21/18 11:57	AJC	TAL CAN
Total/NA	Analysis	9040B		1			440159	12/05/18 21:49	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	439229	11/30/18 03:03	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	439229	11/30/18 03:21	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	437741	11/15/18 10:11	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437900	11/16/18 10:14	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			750.14 mL	1.0 g	401892	11/20/18 12:49	REG	TAL SL
Total/NA	Analysis	9315		1			405210	12/12/18 07:16	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.14 mL	1.0 g	401907	11/20/18 14:23	REG	TAL SL
Total/NA	Analysis	9320		1			404801	12/10/18 08:33	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			406213	12/17/18 16:03	RTM	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-3

Date Collected: 11/13/18 12:20

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-3

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	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			356857	11/23/18 18:23	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			356632	11/21/18 13:33	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	356339	11/20/18 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			356610	11/21/18 12:59	AJC	TAL CAN
Total/NA	Analysis	9040B		1			440159	12/05/18 21:44	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	439229	11/30/18 04:18	TLP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	439229	11/30/18 04:36	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	437741	11/15/18 10:11	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437900	11/16/18 10:14	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			750.57 mL	1.0 g	401892	11/20/18 12:49	REG	TAL SL
Total/NA	Analysis	9315		1			405210	12/12/18 07:16	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.57 mL	1.0 g	401907	11/20/18 14:23	REG	TAL SL
Total/NA	Analysis	9320		1			404801	12/10/18 08:33	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			406213	12/17/18 16:03	RTM	TAL SL

Client Sample ID: W-4

Date Collected: 11/13/18 13:30

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-4

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	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			356857	11/23/18 18:28	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			356632	11/21/18 13:36	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	356339	11/20/18 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			356610	11/21/18 13:01	AJC	TAL CAN
Total/NA	Analysis	9040B		1			440159	12/05/18 21:15	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	439229	11/30/18 04:55	TLP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	439229	11/30/18 05:14	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	437741	11/15/18 10:11	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437900	11/16/18 10:14	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			750.11 mL	1.0 g	401892	11/20/18 12:49	REG	TAL SL
Total/NA	Analysis	9315		1			405211	12/12/18 07:19	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.11 mL	1.0 g	401907	11/20/18 14:23	REG	TAL SL
Total/NA	Analysis	9320		1			404802	12/10/18 08:35	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			406213	12/17/18 16:03	RTM	TAL SL

TestAmerica Denver

Lab Chronicle

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

TestAmerica Job ID: 280-116939-1

Client Sample ID: W-1D

Date Collected: 11/13/18 10:00

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-5

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	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			356857	11/23/18 18:32	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			356632	11/21/18 13:38	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	356339	11/20/18 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			356610	11/21/18 13:03	AJC	TAL CAN
Total/NA	Analysis	9040B		1			440159	12/05/18 21:40	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	439229	11/30/18 05:32	TLP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	439229	11/30/18 05:51	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	437741	11/15/18 10:11	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437900	11/16/18 10:14	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			750.55 mL	1.0 g	401892	11/20/18 12:49	REG	TAL SL
Total/NA	Analysis	9315		1			405211	12/12/18 07:19	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.55 mL	1.0 g	401907	11/20/18 14:23	REG	TAL SL
Total/NA	Analysis	9320		1			404802	12/10/18 08:35	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			406213	12/17/18 16:03	RTM	TAL SL

Client Sample ID: W-3EB

Date Collected: 11/13/18 12:35

Date Received: 11/14/18 09:26

Lab Sample ID: 280-116939-6

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	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			356857	11/23/18 18:37	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	356334	11/20/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			356632	11/21/18 13:40	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	356339	11/20/18 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			356610	11/21/18 13:05	AJC	TAL CAN
Total/NA	Analysis	9040B		1			440228	12/06/18 13:38	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	439229	11/30/18 06:10	TLP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	438116	11/19/18 09:52	MJS	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	437900	11/16/18 10:14	MJS	TAL DEN
Total/NA	Prep	PrecSep-21			749.71 mL	1.0 g	401892	11/20/18 12:49	REG	TAL SL
Total/NA	Analysis	9315		1			405211	12/12/18 07:19	KLS	TAL SL
Total/NA	Prep	PrecSep_0			749.71 mL	1.0 g	401907	11/20/18 14:23	REG	TAL SL
Total/NA	Analysis	9320		1			404802	12/10/18 08:35	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			406213	12/17/18 16:03	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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-116939-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

Laboratory: TestAmerica St. Louis

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

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

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

TestAmerica Denver

Accreditation/Certification Summary

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

TestAmerica Job ID: 280-116939-1

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
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

Chain of Custody Record

[illegible]

Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record



SECRET

[illegible]

Client Information (Sub Contract Lab)				Supplier:	Lab Pkg:	Carrier Tracking No(s)	COC No:
Client Contact				Bandy, Darlene F			280-4627311
Shipping/Receiving				E-Mail:	State of Origin		Page: 1 of 1
Company:				Accreditation Required (See note):		Job #:	
TestAmerica Laboratories, Inc.				DoD ELAP - A21A		280-116939-1	
Address:				One Date Requested:		Preservation Codes:	
13715 Rider Trail North,				12/11/2018		A - HCL B - NaOH C - AsNaOY D - Nitric Acid E - NaHSO4 F - MeOH G - Anhydrous H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
City:				TAT Requested (days):		Total Number of Containers	
Earth City				1			
State, Zip:				PO #			
MO, 63045				WO #			
Phone:				Project #			
314-289-8566(Tel) 314-288-8757(Fax)				28014377			
Email:				SSOW#			
Project Name:				Field Filled Sample (Yes or No)		Special Instructions/Note:	
Xcel Energy GW DCR Monitoring - Hayden				Perform MS/MSD (Yes or No)			
Site:				Rad-228/Pres-228 (213 for Ra-226/Ra-228) SUB			
Xcel Energy CCR - Hayden Station				915, Rad-226/Pres-228 (213 for Ra-226/Ra-228) SUB			
				Rad-228/Pres-228 (213 for Ra-226/Ra-228) SUB			
Sample Identification - Client ID (Lab ID)				Preservation Code			
W-1 (280-116939-1)				Water			
W-2 (280-116939-2)				Water			
W-3 (280-116939-3)				Water			
W-4 (280-116939-4)				Water			
W-1D (280-116939-5)				Water			
W-3EB (280-116939-6)				Water			
HO-1 (280-116939-7)				Water			
HO-2 (280-116939-8)				Water			
HO-3 (280-116939-9)				Water			
Sample Date				Sample Time	Sample Type (C=comp, G=grab)	Matrix (Yes/No, Field Filled)	
11/13/18	10:00	Mountain					
11/13/18	14:20	Mountain					
11/13/18	12:20	Mountain					
11/13/18	13:30	Mountain					
11/13/18	10:00	Mountain					
11/13/18	12:35	Mountain					
11/13/18	15:55	Mountain					
11/12/18	15:35	Mountain					
11/12/18	16:50	Mountain					

Note: Since laboratory accreditation is subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under custody. If the laboratory does up currently maintain accreditation in the State of Origin listed above for analysis, the samples must be shipped back to the TestAmerica Laboratory for 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 in date, return the signed Chain of Custody sheeting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed	Deliverable Requested: I, II, III, IV, Other (specify)	Return To Client	Disposal By Lab
Primary Deliverable Rank: 4		Special Instructions/OC Requirements:	
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	

Chain of Custody Record

TestAmerica

12/17/2018 10:00 AM

Client Information (Sub Contract Lab)		Lab PM Bandy, Darlene F		Carrier Tracking Note(s)		COC No: 280-462731-1	
Client Contact: Shipping/Receiving		Phone:		State of Origin: Colorado		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		E-Mail: darlene.bandy@testamericadn.com		Accreditation Required (See note): DoD ELAP - A2LA		Job #: 280-116939-1	
Address: 13715 Rider Trail North, Earth City, State: Mo, MO, 63045		Due Date Requested: 12/11/2018		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		TAT Requested (days):		Field Filtered Sample (Yes or No)		Total Number of Containers	
Email:		NO #:		Perform MS/MSD (Yes or No)		Special Instructions/Note:	
Project Name: Xcel Energy GW CCR Monitoring - Hayden		WO #:		Radium-228			
Site: Xcel Energy CCR - Hayden Station		Project #: 28014377		Radium-226 (213 for Ra-226/Ra-228) SUB			
		SSOW#:		Radium-228 (213 for Ra-226/Ra-228) SUB			
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Client Information (Sub Contract Lab)

Client Contact:

Shipping/Receiving

Company:

TestAmerica Laboratories, Inc.

Address:

4101 Shuffel Street NW,

City:

North Canton

State, Zip:

OH, 44720

Phone:

330-497-3396 (Tel) 330-497-0772 (Fax)

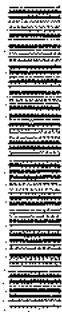
Email:

Project Name:

Xcel Energy GW CCR Monitoring - Hayden

Site:

Xcel Energy CCR - Hayden Station



Chain of Custody Record

Sample: Lab PM: Bandoly, Darlene F C-Max: darlene.bandoly@testamericainc.com State of Origin: Colorado Carrier Tracking Note:		COC No: 280-462732-1 Page: Page 1 of 1 Job #: 280-116939-1 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO₃ F - MeOH G - Anisole H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other: SSI	
Company: TestAmerica Laboratories, Inc. Address: 4101 Shuffel Street NW, City: North Canton State, Zip: OH, 44720 Phone: 330-497-3396 (Tel) 330-497-0772 (Fax) Email:		Accreditation Required (See Note): DoD ELAP - A2LA	
Due Date Requested: 12/7/2018 TAT Requested (days):		Analysis Requested	
PO #: WO #: Project #: 28014377 SSOW#:		Field Filtered Sample (Yes or No) 6010C/3005A (MOD) Borden 6020A/3005A (MOD) 13 Total Metals (w/collision cell) 7470A/7470A Prep Mercury (Hold)	
Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix (Freeze, Solid, On-site, AAS) Preservation Code		Total Number of Containers	
W-1 (280-116939-1) W-2 (280-116939-2) W-3 (280-116939-3) W-4 (280-116939-4) W-1D (280-116939-5) W-3EB (280-116939-6) HO-1 (280-116939-7) HO-2 (280-116939-8) HO-3 (280-116939-9)		Special Instructions/Note: Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell	

Note: Since laboratory accreditation is subject to change, TestAmerica Laboratories, Inc. places the onus of compliance with method, analyte & accreditation requirements on the client. 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 analytical substance 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 accreditation are current to date, retain the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return To Client ☐ Disposed By Lab ☐ Archive For ☐ Months Special Instructions/OC Requirements:	
Empty Kit Reinquished by Reinquished by: Christina Paga Date/Time: 11-15-18 14:30		Melting of Shipment Date/Time: 11-16-18 10:30 Company: TAC	
Reinquished by: Date/Time:		Reinquished by: Date/Time:	
Reinquished by: Date/Time:		Reinquished by: Date/Time:	
Custody Seals Intact A Yes B No		Cover Temperature: °C and Other Remarks	

TestAmerica Canton Sample Receipt Form/Narrative				Login # : _____
Canton Facility				
Client <u>TA DENVER</u>		Site Name _____		Cooler unpacked by: <u>BP</u>
Cooler Received on <u>11-16-18</u>		Opened on <u>11-16-18</u>		
FedEx: 1 st Grd <u>Exp</u> UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____				
Receipt After-hours: Drop-off Date/Time			Storage Location	
TestAmerica Cooler # <u>TA</u> Foam Box Client Cooler Box Other _____				
Packing material used: Bubble Wrap Foam <u>Plastic Bag</u> None Other _____				
COOLANT: <u>Wet Ice</u> Blue Ice Dry Ice Water None				
1. Cooler temperature upon receipt ☐ See Multiple Cooler Form				
IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. <u>02</u> °C Corrected Cooler Temp. <u>1.1</u> °C				
IR GUN #36 (CF +0.6 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C				
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u> Yes No				
-Were the seals on the outside of the cooler(s) signed & dated? Yes No <u>NA</u>				
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No <u>NA</u>				
-Were tamper/custody seals intact and uncompromised? Yes No <u>NA</u>				
3. Shippers' packing slip attached to the cooler(s)? Yes No				
4. Did custody papers accompany the sample(s)? Yes No				
5. Were the custody papers relinquished & signed in the appropriate place? Yes No				
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No				
7. Did all bottles arrive in good condition (Unbroken)? Yes No				
8. Could all bottle labels be reconciled with the COC? Yes No				
9. Were correct bottle(s) used for the test(s) indicated? Yes No				
10. Sufficient quantity received to perform indicated analyses? Yes No				
11. Are these work share samples? Yes No				
If yes, Questions 12-16 have been checked at the originating laboratory.				
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No <u>NA</u> pH Strip Lot# <u>HC850248</u>				
13. Were VOAs on the COC? Yes No				
14. Were air bubbles >6 mm in any VOA vials? <u>Yes</u> Larger than this. Yes No <u>NA</u>				
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 _____				

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES	Samples processed by: _____
18. SAMPLE CONDITION	
Sample(s) _____ were received after the recommended holding time had expired.	
Sample(s) _____ were received in a broken container.	
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)	
19. SAMPLE PRESERVATION	
Sample(s) _____ were further preserved in the laboratory.	
Time preserved: _____ Preservative(s) added/Lot number(s): _____	

WI-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-116939-1

Login Number: 116939

List Source: TestAmerica Denver

List Number: 1

Creator: Quint, Jessica A

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (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: 280-116939-1

Login Number: 116939

List Number: 3

Creator: Dupart, Lacey S

List Source: TestAmerica St. Louis

List Creation: 11/16/18 05:56 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
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	-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?	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

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

TestAmerica Job ID: 280-116939-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
280-116939-1	W-1	99.1	
280-116939-2	W-2	101	
280-116939-3	W-3	107	
280-116939-4	W-4	96.5	
280-116939-5	W-1D	100	
280-116939-6	W-3EB	97.3	
LCS 160-401892/1-A	Lab Control Sample	95.6	
MB 160-401892/20-A	Method Blank	103	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-116939-1	W-1	99.1	79.3
280-116939-2	W-2	101	84.1
280-116939-3	W-3	107	80.0
280-116939-4	W-4	96.5	82.2
280-116939-5	W-1D	100	81.9
280-116939-6	W-3EB	97.3	72.9
LCS 160-401907/1-A	Lab Control Sample	95.6	76.6
MB 160-401907/20-A	Method Blank	103	83.7
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

ANALYTICAL REPORT

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

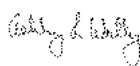
Laboratory Job ID: 280-122696-1

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

For:

HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:
5/16/2019 11:44:19 AM

Ashley Worthy, Project Manager I
ashley.worthy@testamericainc.com

Designee for

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

LINKS

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

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

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

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Definitions/Glossary

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

Job ID: 280-122696-1

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

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

Job ID: 280-122696-1

Job ID: 280-122696-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

Job Narrative
280-122696-1

Comments

No additional comments.

Receipt

The samples were received on 4/17/2019 11:37 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.6° C and 4.6° C.

Receipt Exceptions

The requested 6010C Boron and 6020A Calcium analyses will be performed by TestAmerica's Canton laboratory.

Metals

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

General Chemistry

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

Detection Summary

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

Job ID: 280-122696-1

Client Sample ID: W-1

Lab Sample ID: 280-122696-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.62		0.10	0.023	mg/L	1		6010C	Total
Calcium	340		1.0	0.58	mg/L	1		6020A	Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total
Temperature	21.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	41		6.0	2.0	mg/L	2		9056A	Total/NA
Fluoride	0.29	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	4500		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4600		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-1D

Lab Sample ID: 280-122696-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.52		0.10	0.023	mg/L	1		6010C	Total
Calcium	300		1.0	0.58	mg/L	1		6020A	Recoverable
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU	1		9040B	Total
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	42		6.0	2.0	mg/L	2		9056A	Total/NA
Fluoride	0.31	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3600		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4400		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-122696-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	8.6		0.10	0.023	mg/L	1		6010C	Total
Calcium	350		1.0	0.58	mg/L	1		6020A	Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	110		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.64	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	5400		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	7100		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-122696-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.84		0.10	0.023	mg/L	1		6010C	Total
Calcium	360		1.0	0.58	mg/L	1		6020A	Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total
Temperature	22.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.65	J	2.5	0.30	mg/L	5		9056A	Total/NA
Sulfate	8200		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	13000		100	47	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

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

Job ID: 280-122696-1

Client Sample ID: W-4

Lab Sample ID: 280-122696-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.0		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	350		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	380		30	10	mg/L	10		9056A	Total/NA
Fluoride	0.61	J	5.0	0.60	mg/L	10		9056A	Total/NA
Sulfate	14000		1000	210	mg/L	200		9056A	Total/NA
Total Dissolved Solids (TDS)	21000		200	94	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 280-122696-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	40		0.50	0.12	mg/L	5		6010C	Total Recoverable
Calcium	420		1.0	0.58	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	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	59		6.0	2.0	mg/L	2		9056A	Total/NA
Fluoride	0.32	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3300		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4800		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-122696-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	48		0.50	0.12	mg/L	5		6010C	Total Recoverable
Calcium	420		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	150		6.0	2.0	mg/L	2		9056A	Total/NA
Fluoride	0.17	J	1.0	0.12	mg/L	2		9056A	Total/NA
Sulfate	3300		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	5000		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-122696-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total Recoverable
Calcium	500		1.0	0.58	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	240		15	5.1	mg/L	5		9056A	Total/NA
Sulfate	6300		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	9700		100	47	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

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

Job ID: 280-122696-1

Client Sample ID: MW-8EB

Lab Sample ID: 280-122696-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.034	J	0.10	0.023	mg/L	1		6010C	Total
pH adj. to 25 deg C	6.7	HF	0.1	0.1	SU	1		9040B	Recoverable
Temperature	22.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Method Summary

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

Job ID: 280-122696-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

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

Laboratory References:

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

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

Sample Summary

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

Job ID: 280-122696-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-122696-1	W-1	Water	04/15/19 14:00	04/18/19 11:37
280-122696-2	W-1D	Water	04/15/19 14:00	04/18/19 11:37
280-122696-3	W-2	Water	04/15/19 15:55	04/18/19 11:37
280-122696-4	W-3	Water	04/15/19 16:55	04/18/19 11:37
280-122696-5	W-4	Water	04/15/19 15:00	04/18/19 11:37
280-122696-6	MW-6	Water	04/16/19 09:45	04/18/19 11:37
280-122696-7	MW-7	Water	04/16/19 08:40	04/18/19 11:37
280-122696-8	MW-8	Water	04/16/19 11:20	04/18/19 11:37
280-122696-9	MW-8EB	Water	04/16/19 12:20	04/18/19 11:37

Client Sample Results

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

Job ID: 280-122696-1

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

Client Sample ID: W-1
Date Collected: 04/15/19 14:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.62		0.10	0.023	mg/L		04/22/19 14:00	04/23/19 23:21	1

Client Sample ID: W-1D
Date Collected: 04/15/19 14:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.52		0.10	0.023	mg/L		04/22/19 14:00	04/23/19 23:26	1

Client Sample ID: W-2
Date Collected: 04/15/19 15:55
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	8.6		0.10	0.023	mg/L		04/22/19 14:00	04/23/19 23:31	1

Client Sample ID: W-3
Date Collected: 04/15/19 16:55
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.84		0.10	0.023	mg/L		04/22/19 14:00	04/23/19 23:35	1

Client Sample ID: W-4
Date Collected: 04/15/19 15:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.0		0.10	0.023	mg/L		04/22/19 14:00	04/23/19 23:40	1

Client Sample ID: MW-6
Date Collected: 04/16/19 09:45
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	40		0.50	0.12	mg/L		04/22/19 14:00	04/26/19 21:34	5

Client Sample ID: MW-7
Date Collected: 04/16/19 08:40
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	48		0.50	0.12	mg/L		04/22/19 14:00	04/26/19 21:38	5

Client Sample ID: MW-8
Date Collected: 04/16/19 11:20
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L		04/22/19 14:00	04/24/19 00:04	1

Client Sample ID: MW-8EB
Date Collected: 04/16/19 12:20
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.034	J	0.10	0.023	mg/L		04/22/19 14:00	04/24/19 00:09	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-122696-1

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

Client Sample ID: W-1
Date Collected: 04/15/19 14:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	340		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:04	1

Client Sample ID: W-1D
Date Collected: 04/15/19 14:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	300		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:06	1

Client Sample ID: W-2
Date Collected: 04/15/19 15:55
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	350		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:08	1

Client Sample ID: W-3
Date Collected: 04/15/19 16:55
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	360		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:15	1

Client Sample ID: W-4
Date Collected: 04/15/19 15:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	350		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:18	1

Client Sample ID: MW-6
Date Collected: 04/16/19 09:45
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	420		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:20	1

Client Sample ID: MW-7
Date Collected: 04/16/19 08:40
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	420		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:23	1

Client Sample ID: MW-8
Date Collected: 04/16/19 11:20
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	500		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:25	1

Client Sample ID: MW-8EB
Date Collected: 04/16/19 12:20
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L	—	04/22/19 14:00	04/25/19 22:28	1

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Client Sample Results

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

Job ID: 280-122696-1

General Chemistry

Client Sample ID: W-1
Date Collected: 04/15/19 14:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-1
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			05/01/19 18:39	1
Temperature	21.9	HF	1.0	1.0	Degrees C			05/01/19 18:39	1
Chloride	41		6.0	2.0	mg/L			05/12/19 21:10	2
Fluoride	0.29	J	1.0	0.12	mg/L			05/12/19 21:10	2
Sulfate	4500		250	52	mg/L			05/12/19 21:29	50
Total Dissolved Solids (TDS)	4600		40	19	mg/L			04/19/19 13:07	1

Client Sample ID: W-1D
Date Collected: 04/15/19 14:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.8	HF	0.1	0.1	SU			05/01/19 18:43	1
Temperature	22.0	HF	1.0	1.0	Degrees C			05/01/19 18:43	1
Chloride	42		6.0	2.0	mg/L			05/12/19 21:47	2
Fluoride	0.31	J	1.0	0.12	mg/L			05/12/19 21:47	2
Sulfate	3600		250	52	mg/L			05/12/19 22:06	50
Total Dissolved Solids (TDS)	4400		40	19	mg/L			04/19/19 13:07	1

Client Sample ID: W-2
Date Collected: 04/15/19 15:55
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU			05/01/19 18:47	1
Temperature	22.0	HF	1.0	1.0	Degrees C			05/01/19 18:47	1
Chloride	110		15	5.1	mg/L			05/12/19 22:25	5
Fluoride	0.64	J	2.5	0.30	mg/L			05/12/19 22:25	5
Sulfate	5400		500	100	mg/L			05/12/19 22:43	100
Total Dissolved Solids (TDS)	7100		40	19	mg/L			04/19/19 13:07	1

Client Sample ID: W-3
Date Collected: 04/15/19 16:55
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-4
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			05/01/19 18:52	1
Temperature	22.5	HF	1.0	1.0	Degrees C			05/01/19 18:52	1
Chloride	200		15	5.1	mg/L			05/12/19 23:02	5
Fluoride	0.65	J	2.5	0.30	mg/L			05/12/19 23:02	5
Sulfate	8200		500	100	mg/L			05/12/19 23:21	100
Total Dissolved Solids (TDS)	13000		100	47	mg/L			04/19/19 13:07	1

Client Sample ID: W-4
Date Collected: 04/15/19 15:00
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-5
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			05/01/19 18:56	1
Temperature	22.5	HF	1.0	1.0	Degrees C			05/01/19 18:56	1
Chloride	380		30	10	mg/L			05/12/19 23:40	10
Fluoride	0.61	J	5.0	0.60	mg/L			05/12/19 23:40	10
Sulfate	14000		1000	210	mg/L			05/12/19 23:58	200
Total Dissolved Solids (TDS)	21000		200	94	mg/L			04/19/19 13:07	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-122696-1

General Chemistry

Client Sample ID: MW-6
Date Collected: 04/16/19 09:45
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-6
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			05/01/19 18:59	1
Temperature	22.0	HF	1.0	1.0	Degrees C			05/01/19 18:59	1
Chloride	59		6.0	2.0	mg/L			05/13/19 00:54	2
Fluoride	0.32	J	1.0	0.12	mg/L			05/13/19 00:54	2
Sulfate	3300		250	52	mg/L			05/13/19 01:13	50
Total Dissolved Solids (TDS)	4800		40	19	mg/L			04/19/19 13:07	1

Client Sample ID: MW-7
Date Collected: 04/16/19 08:40
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			05/01/19 19:13	1
Temperature	22.0	HF	1.0	1.0	Degrees C			05/01/19 19:13	1
Chloride	150		6.0	2.0	mg/L			05/13/19 01:32	2
Fluoride	0.17	J	1.0	0.12	mg/L			05/13/19 01:32	2
Sulfate	3300		250	52	mg/L			05/13/19 01:51	50
Total Dissolved Solids (TDS)	5000		40	19	mg/L			04/19/19 13:07	1

Client Sample ID: MW-8
Date Collected: 04/16/19 11:20
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-8
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			05/01/19 19:17	1
Temperature	22.5	HF	1.0	1.0	Degrees C			05/01/19 19:17	1
Chloride	240		15	5.1	mg/L			05/13/19 02:09	5
Fluoride	ND		2.5	0.30	mg/L			05/13/19 02:09	5
Sulfate	6300		500	100	mg/L			05/13/19 02:28	100
Total Dissolved Solids (TDS)	9700		100	47	mg/L			04/19/19 13:07	1

Client Sample ID: MW-8EB
Date Collected: 04/16/19 12:20
Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-9
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			05/01/19 19:21	1
Temperature	22.6	HF	1.0	1.0	Degrees C			05/01/19 19:21	1
Chloride	ND		3.0	1.0	mg/L			05/13/19 02:47	1
Fluoride	ND		0.50	0.060	mg/L			05/13/19 02:47	1
Sulfate	ND		5.0	1.0	mg/L			05/13/19 02:47	1
Total Dissolved Solids (TDS)	ND		100	47	mg/L			04/19/19 13:07	1

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-122696-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-377565/1-A
Matrix: Water
Analysis Batch: 377978

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 377565

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		04/22/19 14:00	04/23/19 21:49	1

Lab Sample ID: LCS 240-377565/2-A
Matrix: Water
Analysis Batch: 377978

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 377565

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.04		mg/L		104	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-377565/1-A
Matrix: Water
Analysis Batch: 378408

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 377565

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.58	mg/L		04/22/19 14:00	04/25/19 21:22	1

Lab Sample ID: LCS 240-377565/3-A
Matrix: Water
Analysis Batch: 378408

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 377565

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	9.53		mg/L		95	80 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-456726/29
Matrix: Water
Analysis Batch: 456726

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 280-457872/6
Matrix: Water
Analysis Batch: 457872

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	1.0	mg/L			05/12/19 17:57	1
Fluoride	ND		0.50	0.060	mg/L			05/12/19 17:57	1
Sulfate	ND		5.0	1.0	mg/L			05/12/19 17:57	1

Lab Sample ID: LCS 280-457872/4
Matrix: Water
Analysis Batch: 457872

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

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-122696-1

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

Lab Sample ID: LCS 280-457872/4

Matrix: Water

Analysis Batch: 457872

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	4.79		mg/L		96	90 - 110
Sulfate	100	99.9		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-457872/5

Matrix: Water

Analysis Batch: 457872

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	4.78		mg/L		96	90 - 110	0	10
Sulfate	100	99.5		mg/L		99	90 - 110	0	10

Lab Sample ID: MRL 280-457872/3

Matrix: Water

Analysis Batch: 457872

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	2.58	J	mg/L		103	50 - 150
Fluoride	0.200	0.202	J	mg/L		101	50 - 150
Sulfate	2.50	2.59	J	mg/L		103	50 - 150

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

Lab Sample ID: MB 280-455299/1

Matrix: Water

Analysis Batch: 455299

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			04/19/19 13:07	1

Lab Sample ID: LCS 280-455299/2

Matrix: Water

Analysis Batch: 455299

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	93 - 110

Lab Sample ID: LCSD 280-455299/25

Matrix: Water

Analysis Batch: 455299

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)	500	488		mg/L		98	93 - 110	1	20

QC Association Summary

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

Job ID: 280-122696-1

Metals

Prep Batch: 377565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-1	W-1	Total Recoverable	Water	3005A	
280-122696-2	W-1D	Total Recoverable	Water	3005A	
280-122696-3	W-2	Total Recoverable	Water	3005A	
280-122696-4	W-3	Total Recoverable	Water	3005A	
280-122696-5	W-4	Total Recoverable	Water	3005A	
280-122696-6	MW-6	Total Recoverable	Water	3005A	
280-122696-7	MW-7	Total Recoverable	Water	3005A	
280-122696-8	MW-8	Total Recoverable	Water	3005A	
280-122696-9	MW-8EB	Total Recoverable	Water	3005A	
MB 240-377565/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-377565/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-377565/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 377978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-1	W-1	Total Recoverable	Water	6010C	377565
280-122696-2	W-1D	Total Recoverable	Water	6010C	377565
280-122696-3	W-2	Total Recoverable	Water	6010C	377565
280-122696-4	W-3	Total Recoverable	Water	6010C	377565
280-122696-5	W-4	Total Recoverable	Water	6010C	377565
280-122696-8	MW-8	Total Recoverable	Water	6010C	377565
280-122696-9	MW-8EB	Total Recoverable	Water	6010C	377565
MB 240-377565/1-A	Method Blank	Total Recoverable	Water	6010C	377565
LCS 240-377565/2-A	Lab Control Sample	Total Recoverable	Water	6010C	377565

Analysis Batch: 378408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-1	W-1	Total Recoverable	Water	6020A	377565
280-122696-2	W-1D	Total Recoverable	Water	6020A	377565
280-122696-3	W-2	Total Recoverable	Water	6020A	377565
280-122696-4	W-3	Total Recoverable	Water	6020A	377565
280-122696-5	W-4	Total Recoverable	Water	6020A	377565
280-122696-6	MW-6	Total Recoverable	Water	6020A	377565
280-122696-7	MW-7	Total Recoverable	Water	6020A	377565
280-122696-8	MW-8	Total Recoverable	Water	6020A	377565
280-122696-9	MW-8EB	Total Recoverable	Water	6020A	377565
MB 240-377565/1-A	Method Blank	Total Recoverable	Water	6020A	377565
LCS 240-377565/3-A	Lab Control Sample	Total Recoverable	Water	6020A	377565

Analysis Batch: 378469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-6	MW-6	Total Recoverable	Water	6010C	377565
280-122696-7	MW-7	Total Recoverable	Water	6010C	377565

General Chemistry

Analysis Batch: 455299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-1	W-1	Total/NA	Water	SM 2540C	
280-122696-2	W-1D	Total/NA	Water	SM 2540C	
280-122696-3	W-2	Total/NA	Water	SM 2540C	

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QC Association Summary

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

Job ID: 280-122696-1

General Chemistry (Continued)

Analysis Batch: 455299 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-4	W-3	Total/NA	Water	SM 2540C	
280-122696-5	W-4	Total/NA	Water	SM 2540C	
280-122696-6	MW-6	Total/NA	Water	SM 2540C	
280-122696-7	MW-7	Total/NA	Water	SM 2540C	
280-122696-8	MW-8	Total/NA	Water	SM 2540C	
280-122696-9	MW-8EB	Total/NA	Water	SM 2540C	
MB 280-455299/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-455299/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-455299/25	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 456726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-1	W-1	Total/NA	Water	9040B	
280-122696-2	W-1D	Total/NA	Water	9040B	
280-122696-3	W-2	Total/NA	Water	9040B	
280-122696-4	W-3	Total/NA	Water	9040B	
280-122696-5	W-4	Total/NA	Water	9040B	
280-122696-6	MW-6	Total/NA	Water	9040B	
280-122696-7	MW-7	Total/NA	Water	9040B	
280-122696-8	MW-8	Total/NA	Water	9040B	
280-122696-9	MW-8EB	Total/NA	Water	9040B	
LCS 280-456726/29	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 457872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-122696-1	W-1	Total/NA	Water	9056A	
280-122696-1	W-1	Total/NA	Water	9056A	
280-122696-2	W-1D	Total/NA	Water	9056A	
280-122696-2	W-1D	Total/NA	Water	9056A	
280-122696-3	W-2	Total/NA	Water	9056A	
280-122696-3	W-2	Total/NA	Water	9056A	
280-122696-4	W-3	Total/NA	Water	9056A	
280-122696-4	W-3	Total/NA	Water	9056A	
280-122696-5	W-4	Total/NA	Water	9056A	
280-122696-5	W-4	Total/NA	Water	9056A	
280-122696-6	MW-6	Total/NA	Water	9056A	
280-122696-6	MW-6	Total/NA	Water	9056A	
280-122696-7	MW-7	Total/NA	Water	9056A	
280-122696-7	MW-7	Total/NA	Water	9056A	
280-122696-8	MW-8	Total/NA	Water	9056A	
280-122696-8	MW-8	Total/NA	Water	9056A	
280-122696-9	MW-8EB	Total/NA	Water	9056A	
MB 280-457872/6	Method Blank	Total/NA	Water	9056A	
LCS 280-457872/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-457872/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-457872/3	Lab Control Sample	Total/NA	Water	9056A	

Eurofins TestAmerica, Denver

Lab Chronicle

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

Job ID: 280-122696-1

Client Sample ID: W-1

Date Collected: 04/15/19 14:00

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-1

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/23/19 23:21	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:04	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 18:39	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	457872	05/12/19 21:10	JAP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	457872	05/12/19 21:29	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: W-1D

Date Collected: 04/15/19 14:00

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-2

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/23/19 23:26	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:06	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 18:43	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	457872	05/12/19 21:47	JAP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	457872	05/12/19 22:06	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: W-2

Date Collected: 04/15/19 15:55

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-3

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/23/19 23:31	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:08	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 18:47	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	457872	05/12/19 22:25	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	457872	05/12/19 22:43	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: W-3

Date Collected: 04/15/19 16:55

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-4

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/23/19 23:35	WKD	TAL CAN

Eurofins TestAmerica, Denver

Lab Chronicle

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

Job ID: 280-122696-1

Client Sample ID: W-3

Date Collected: 04/15/19 16:55

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-4

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:15	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 18:52	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	457872	05/12/19 23:02	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	457872	05/12/19 23:21	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: W-4

Date Collected: 04/15/19 15:00

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-5

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/23/19 23:40	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:18	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 18:56	SGB	TAL DEN
Total/NA	Analysis	9056A		10	5 mL	5 mL	457872	05/12/19 23:40	JAP	TAL DEN
Total/NA	Analysis	9056A		200	5 mL	5 mL	457872	05/12/19 23:58	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: MW-6

Date Collected: 04/16/19 09:45

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-6

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		5			378469	04/26/19 21:34	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:20	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 18:59	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	457872	05/13/19 00:54	JAP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	457872	05/13/19 01:13	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: MW-7

Date Collected: 04/16/19 08:40

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-7

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	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		5			378469	04/26/19 21:38	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:23	DSH	TAL CAN

Eurofins TestAmerica, Denver

Lab Chronicle

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

Job ID: 280-122696-1

Client Sample ID: MW-7

Date Collected: 04/16/19 08:40

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9040B		1			456726	05/01/19 19:13	SGB	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	457872	05/13/19 01:32	JAP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	457872	05/13/19 01:51	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: MW-8

Date Collected: 04/16/19 11:20

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/24/19 00:04	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:25	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 19:17	SGB	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	457872	05/13/19 02:09	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	457872	05/13/19 02:28	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Client Sample ID: MW-8EB

Date Collected: 04/16/19 12:20

Date Received: 04/18/19 11:37

Lab Sample ID: 280-122696-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010C		1			377978	04/24/19 00:09	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	377565	04/22/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			378408	04/25/19 22:28	DSH	TAL CAN
Total/NA	Analysis	9040B		1			456726	05/01/19 19:21	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	457872	05/13/19 02:47	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	455299	04/19/19 13:07	SGB	TAL DEN

Laboratory References:

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

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

Eurofins TestAmerica, Denver

Accreditation/Certification Summary

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

Job ID: 280-122696-1

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD		2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.				
Analysis Method	Prep Method	Matrix	Analyte	
9040B		Water	Temperature	
9056A		Water	Chloride	
9056A		Water	Fluoride	
9056A		Water	Sulfate	

Laboratory: Eurofins 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	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Illinois	NELAP	5	200004	07-31-19 *
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19 *
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

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

Eurofins TestAmerica, Denver

Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver
#280



280.12626 Chain of Custody

[illegible]

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

0.6/CC.4
11.6/CL.4

Chain of Custody Record



eurofins

Environmental Testing
TestAmerica

Client Information (Sub Contract Lab)		Sample	Lab PIS	Control Tracking Area	COF No.					
Company: TestAmerica Laboratories, Inc.		Reference:	Bondy, Danielle P		280-479899-1					
Address: 4101 Shuffel Street NW		Phone:	E-Mail: danielle.bondy@testamericainc.com	State of Origin: Colorado	Page: Page 1 of 1					
City: North Canton		Due Date Requested: 5/10/2019	Accreditation Required (See note): DoD ELAP - A2LA	Job #:	280-122696-1					
State: OH, 44720		TAI Requested (days)		Preservation Codes:	A - HCl B - NaOH C - 2N Acetate D - Nitric Acid E - NaOH F - MeOH G - Acetone H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA M - Other (Specify)					
Project Name: Xcel Energy GW CCR Monitoring - Hayden		SO #:		Analysis Requested						
Site: Xcel Energy CCR - Hayden Station		WFO #:								
Project #:		Project #:								
28014377		Project #:								
SEOWE:		Project #:								
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=Water, S=Sediment, O=Other)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C/3005A (MOD) Bore	6020A/3005A Calump	Total Number of Containers	Special Instructions/Note:
W-1 (280-122696-1)	4/15/19	14:00	Mountain	Water	X	X	X	X	1	Use Collision Cell
W-1D (280-122696-2)	4/15/19	14:00	Mountain	Water	X	X	X	X	1	Use Collision Cell
W-2 (280-122696-3)	4/15/19	15:35	Mountain	Water	X	X	X	X	1	Use Collision Cell
W-3 (280-122696-4)	4/15/19	16:55	Mountain	Water	X	X	X	X	1	Use Collision Cell
W-4 (280-122696-5)	4/15/19	15:00	Mountain	Water	X	X	X	X	1	Use Collision Cell
MW-6 (280-122696-6)	4/16/19	09:45	Mountain	Water	X	X	X	X	1	Use Collision Cell
MW-7 (280-122696-7)	4/16/19	08:40	Mountain	Water	X	X	X	X	1	Use Collision Cell
MW-8 (280-122696-8)	4/16/19	11:20	Mountain	Water	X	X	X	X	1	Use Collision Cell
MW-5EB (280-122696-8)	4/16/19	12:20	Mountain	Water	X	X	X	X	1	Use Collision Cell

Note: Since laboratory accreditation is subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon our client's contract laboratory. This sample shipment is covered under client's custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analytical instrument being analyzed, the samples must be signed 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 relevant accreditation are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Uncontaminated	Contaminated	Return To Client	Disposal By Lab
Deliverable Requested I, II, III, IV, Other (specify)	Primary Deliverable Rank: 4	☐	☐
Empty Kit Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Custody Seal Intact	Custody Seal No.	Company	Company
A Yes A No		Company	Company

Ver: 01/16/2019

TestAmerica Canton Sample Receipt Form/Narrative

Login #: _____

Canton Facility

Client Environ - TA - Denver

Site Name _____

Cooler unpacked by:

Cooler Received on 4-20-19Opened on 4-20-19 935Ryan CribleyFedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

Storage Location _____

TestAmerica Cooler # 7A 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 -0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

IR GUN #36 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 Yes No

-Were the seals on the outside of the cooler(s) signed & dated? Total Yes No NA

-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No

-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No

4. Did custody papers accompany the sample(s)? Yes No

5. Were the custody papers relinquished & signed in the appropriate place? Yes No

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No

7. Did all bottles arrive in good condition (Unbroken)? Yes No

8. Could all bottle labels be reconciled with the COC? Yes No

9. Were correct bottle(s) used for the test(s) indicated? Yes No

10. Sufficient quantity received to perform indicated analyses? Yes No

11. Are these work share samples? Yes No

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA

13. Were VOAs on the COC? Yes No NA

14. Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this.

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____

16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not
checked for pH by
Receiving:VOAs
Oil and Grease
TOCpH Strip Lot# HC984738

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): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

BT-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-122696-1

Login Number: 122696

List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Pottruff, Reed W

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

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

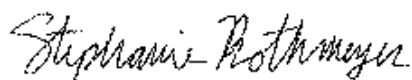
Laboratory Job ID: 280-132316-1

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

For:

HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

1/28/2020 2:18:21 PM

Stephanie Rothmeyer, Project Manager I
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Designee for

Darlene Bandy, Project Manager I
(303)736-0188

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

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

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

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Definitions/Glossary

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

Job ID: 280-132316-1

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
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
F1	MS and/or MSD Recovery is outside acceptance limits.
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.
α	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)

Case Narrative

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

Job ID: 280-132316-1

Job ID: 280-132316-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-132316-1

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 12/20/2019 at 10:29 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.9° C, 4.3° C and 4.4° C.

The container labels for the following sample did not match the information listed on the Chain-of-Custody (COC): MW-6 (280-132316-6). The container labels lists collection time "14:50", while the COC lists "14:20". The sample was logged per the collection time listed on the COC.

TOTAL RECOVERABLE METALS

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 12/30/2019 and analyzed on 01/06/2020 and 12/31/2019.

Boron failed the recovery criteria high for the MSD of sample 240-124351-1 in batch 240-417955. The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

Samples MW-6 (280-132316-6)[10X] and MW-7 (280-132316-7)[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 RECOVERABLE METALS (ICPMS)

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 12/30/2019 and analyzed on 01/06/2020 and 12/31/2019.

Calcium failed the recovery criteria high for the MS and MSD of sample 240-124375-1 in batch 240-417956. 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.

Case Narrative

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

Job ID: 280-132316-1

Job ID: 280-132316-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

Samples MW-6 (280-132316-6)[5X] and MW-7 (280-132316-7)[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 DISSOLVED SOLIDS

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 12/24/2019.

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

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 12/24/2019.

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

CORROSIVITY (PH)

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 01/06/2020 and 01/07/2020.

The following sample's pH did not equilibrate to 0.05 pH units after three measurements: MW-7EB (280-132316-8). This was observed in a previous batch; thus, the sample was not rerun.

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

ANIONS (28 DAYS)

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 01/13/2020, 01/14/2020, 01/15/2020 and 01/16/2020.

Chloride failed the recovery criteria high for the MS and MSD of sample W-1 (280-132316-1) in batch 280-482902. Refer to the QC report for details.

Samples W-1 (280-132316-1)[20X], W-1D (280-132316-2)[20X], W-2 (280-132316-3)[20X], W-2 (280-132316-3)[50X], W-3 (280-132316-4)[100X], W-3 (280-132316-4)[20X], W-4 (280-132316-5)[100X], W-4 (280-132316-5)[20X], W-4 (280-132316-5)[5X], MW-6 (280-132316-6)[20X], MW-7 (280-132316-7)[20X], MW-8 (280-132316-9)[100X], MW-8 (280-132316-9)[20X] and MW-8 (280-132316-9)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The continuing calibration verification (CCV) associated with batch 280-482774 recovered above the upper control limit for Fluoride. The samples associated with this CCV were non-detect for the affected analyte; therefore, the data have been reported.

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

RADIUM-226 (GFPC)

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 12/31/2019 and analyzed on 01/27/2020.

Radium-226 was detected in method blank MB 160-455705/22-B 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

Case Narrative

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

Job ID: 280-132316-1

Job ID: 280-132316-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The following sample was prepared at a reduced aliquot due to possible matrix interference: MW-8 (280-132316-9).

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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

RADIUM-228

Samples W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 12/31/2019 and analyzed on 01/14/2020.

The following sample was prepared at a reduced aliquot due to possible matrix interference: MW-8 (280-132316-9).

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

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 W-1 (280-132316-1), W-1D (280-132316-2), W-2 (280-132316-3), W-3 (280-132316-4), W-4 (280-132316-5), MW-6 (280-132316-6), MW-7 (280-132316-7), MW-7EB (280-132316-8) and MW-8 (280-132316-9) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 01/28/2020.

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

Detection Summary

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

Job ID: 280-132316-1

Client Sample ID: W-1

Lab Sample ID: 280-132316-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.63		0.10	0.023	mg/L	1			6010C	Total Recoverable
Barium	0.010		0.0050	0.0022	mg/L	1			6020A	Total Recoverable
Calcium	380		1.0	0.58	mg/L	1			6020A	Total Recoverable
Cobalt	0.00084	J	0.0010	0.00019	mg/L	1			6020A	Total Recoverable
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1			6020A	Total Recoverable
Selenium	0.013		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
Lithium	0.26		0.0080	0.0017	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	27		3.0	1.0	mg/L	1			9056A	Total/NA
Fluoride	0.18	J	0.50	0.17	mg/L	1			9056A	Total/NA
Sulfate	2800		100	21	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4600		40	19	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: W-1D

Lab Sample ID: 280-132316-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	0.60		0.10	0.023	mg/L	1			6010C	Total Recoverable
Barium	0.010		0.0050	0.0022	mg/L	1			6020A	Total Recoverable
Calcium	360		1.0	0.58	mg/L	1			6020A	Total Recoverable
Cobalt	0.00080	J	0.0010	0.00019	mg/L	1			6020A	Total Recoverable
Molybdenum	0.0031	J	0.010	0.0011	mg/L	1			6020A	Total Recoverable
Selenium	0.012		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
Lithium	0.26		0.0080	0.0017	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	27		3.0	1.0	mg/L	1			9056A	Total/NA
Fluoride	0.17	J	0.50	0.17	mg/L	1			9056A	Total/NA
Sulfate	3000		100	21	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4400		40	19	mg/L	1			SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-132316-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	10		0.10	0.023	mg/L	1			6010C	Total Recoverable
Barium	0.0062		0.0050	0.0022	mg/L	1			6020A	Total Recoverable
Calcium	400		1.0	0.58	mg/L	1			6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

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

Job ID: 280-132316-1

Client Sample ID: W-2 (Continued)

Lab Sample ID: 280-132316-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.0011		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0032	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0036	J	0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.59		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	88		3.0	1.0	mg/L	1		9056A	Total/NA
Sulfate	4300		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7300		100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-132316-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.84		0.10	0.023	mg/L	1		6010C	Total
									Recoverable
Barium	0.0087		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	420		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00026	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.0018		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0027	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.014		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	1.1		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	170		60	20	mg/L	20		9056A	Total/NA
Sulfate	7500		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	13000		100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-132316-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.92		0.10	0.023	mg/L	1		6010C	Total
									Recoverable
Barium	0.0088		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	400		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00023	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.0067		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0030	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0018	J	0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

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

Job ID: 280-132316-1

Client Sample ID: W-4 (Continued)

Lab Sample ID: 280-132316-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.60		0.0080	0.0017	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	23.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	310		60	20	mg/L	20		9056A	Total/NA
Sulfate	13000		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	20000		200	94	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 280-132316-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	45		1.0	0.23	mg/L	10		6010C	Total
									Recoverable
Barium	0.0061		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	460		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00033	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Molybdenum	1.3		0.050	0.0054	mg/L	5		6020A	Total
									Recoverable
Selenium	0.014		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.095		0.040	0.0083	mg/L	5		6020A	Total
									Recoverable
pH adj. to 25 deg C	8.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	64		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.21	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	3200		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4500		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-132316-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	50		1.0	0.23	mg/L	10		6010C	Total
									Recoverable
Barium	0.0056		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	460		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00020	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.79		0.050	0.0054	mg/L	5		6020A	Total
									Recoverable
Selenium	0.0087		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.24		0.040	0.0083	mg/L	5		6020A	Total
									Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	170		3.0	1.0	mg/L	1		9056A	Total/NA
Sulfate	3400		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4700		40	19	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

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

Job ID: 280-132316-1

Client Sample ID: MW-7EB

Lab Sample ID: 280-132316-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.13		0.10	0.023	mg/L	1		6010C	Total
									Recoverable
pH adj. to 25 deg C	8.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	24.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Sulfate	1.5	J	5.0	1.0	mg/L	1		9056A	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-132316-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.0		0.10	0.023	mg/L	1		6010C	Total
									Recoverable
Barium	0.0073		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	180		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.00039	J	0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0016	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.028		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.62		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	190		60	20	mg/L	20		9056A	Total/NA
Sulfate	7100		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	12000		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Method Summary

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

Job ID: 280-132316-1

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

Protocol References:

None = None

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

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

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

Laboratory References:

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

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

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

Sample Summary

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

Job ID: 280-132316-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-132316-1	W-1	Water	12/19/19 09:40	12/20/19 10:29	
280-132316-2	W-1D	Water	12/19/19 09:40	12/20/19 10:29	
280-132316-3	W-2	Water	12/19/19 12:15	12/20/19 10:29	
280-132316-4	W-3	Water	12/19/19 13:35	12/20/19 10:29	
280-132316-5	W-4	Water	12/19/19 11:10	12/20/19 10:29	
280-132316-6	MW-6	Water	12/19/19 14:20	12/20/19 10:29	
280-132316-7	MW-7	Water	12/19/19 15:55	12/20/19 10:29	
280-132316-8	MW-7EB	Water	12/19/19 16:05	12/20/19 10:29	
280-132316-9	MW-8	Water	12/19/19 17:05	12/20/19 10:29	

Client Sample Results

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

Job ID: 280-132316-1

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

Client Sample ID: W-1
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.63		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:01	1

Client Sample ID: W-1D
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.60		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:06	1

Client Sample ID: W-2
Date Collected: 12/19/19 12:15
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	10		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:11	1

Client Sample ID: W-3
Date Collected: 12/19/19 13:35
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.84		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:15	1

Client Sample ID: W-4
Date Collected: 12/19/19 11:10
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.92		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:20	1

Client Sample ID: MW-6
Date Collected: 12/19/19 14:20
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	45		1.0	0.23	mg/L	—	12/30/19 14:00	01/06/20 10:50	10

Client Sample ID: MW-7
Date Collected: 12/19/19 15:55
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	50		1.0	0.23	mg/L	—	12/30/19 14:00	01/06/20 10:55	10

Client Sample ID: MW-7EB
Date Collected: 12/19/19 16:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.13		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:42	1

Client Sample ID: MW-8
Date Collected: 12/19/19 17:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.0		0.10	0.023	mg/L	—	12/30/19 14:00	12/31/19 12:47	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Client Sample ID: W-1

Date Collected: 12/19/19 09:40

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.010		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:02	1
Calcium	380		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:02	1
Cadmium	ND		0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:02	1
Cobalt	0.00084	J	0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:02	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:23	1
Selenium	0.013		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:02	1
Lithium	0.26		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:23	1

Client Sample ID: W-1D

Date Collected: 12/19/19 09:40

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.010		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:06	1
Calcium	360		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:06	1
Cadmium	ND		0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:06	1
Cobalt	0.00080	J	0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:06	1
Molybdenum	0.0031	J	0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:26	1
Selenium	0.012		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:06	1
Lithium	0.26		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:26	1

Client Sample ID: W-2

Date Collected: 12/19/19 12:15

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0062		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:11	1
Calcium	400		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:11	1
Cadmium	ND		0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:11	1
Cobalt	0.0011		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:11	1
Molybdenum	0.0032	J	0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:33	1
Selenium	0.0036	J	0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:11	1
Lithium	0.59		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:33	1

Client Sample ID: W-3

Date Collected: 12/19/19 13:35

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0087		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:15	1
Calcium	420		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:15	1
Cadmium	0.00026	J	0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:15	1
Cobalt	0.0018		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:15	1
Molybdenum	0.0027	J	0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:35	1
Selenium	0.014		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:15	1
Lithium	1.1		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:35	1

Client Sample ID: W-4

Date Collected: 12/19/19 11:10

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0088		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:19	1
Calcium	400		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:19	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Client Sample ID: W-4
Date Collected: 12/19/19 11:10
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.00023	J	0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:19	1
Cobalt	0.0067		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:19	1
Molybdenum	0.0030	J	0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:37	1
Selenium	0.0018	J	0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:19	1
Lithium	0.60		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:37	1

Client Sample ID: MW-6
Date Collected: 12/19/19 14:20
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0061		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:24	1
Calcium	460		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:24	1
Cadmium	0.00033	J	0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:24	1
Cobalt	ND		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:24	1
Molybdenum	1.3		0.050	0.0054	mg/L		12/30/19 14:00	01/06/20 12:40	5
Selenium	0.014		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:24	1
Lithium	0.095		0.040	0.0083	mg/L		12/30/19 14:00	01/06/20 12:40	5

Client Sample ID: MW-7
Date Collected: 12/19/19 15:55
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0056		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:28	1
Calcium	460		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:28	1
Cadmium	0.00020	J	0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:28	1
Cobalt	ND		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:28	1
Molybdenum	0.79		0.050	0.0054	mg/L		12/30/19 14:00	01/06/20 12:42	5
Selenium	0.0087		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:28	1
Lithium	0.24		0.040	0.0083	mg/L		12/30/19 14:00	01/06/20 12:42	5

Client Sample ID: MW-7EB
Date Collected: 12/19/19 16:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:41	1
Calcium	ND		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:41	1
Cadmium	ND		0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:41	1
Cobalt	ND		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:41	1
Molybdenum	ND		0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:44	1
Selenium	ND		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:41	1
Lithium	ND		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:44	1

Client Sample ID: MW-8
Date Collected: 12/19/19 17:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0073		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 15:45	1
Calcium	180		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 15:45	1
Cadmium	ND		0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 15:45	1
Cobalt	0.00039	J	0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 15:45	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Client Sample ID: MW-8
Date Collected: 12/19/19 17:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.0016	J	0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 12:46	1
Selenium	0.028		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 15:45	1
Lithium	0.62		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 12:46	1

General Chemistry

Client Sample ID: W-1
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1
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			01/06/20 15:40	1
Temperature	21.9	HF	1.0	1.0	Degrees C			01/06/20 15:40	1
Chloride	27		3.0	1.0	mg/L			01/13/20 19:14	1
Fluoride	0.18	J	0.50	0.17	mg/L			01/16/20 15:31	1
Sulfate	2800		100	21	mg/L			01/13/20 19:30	20
Total Dissolved Solids (TDS)	4600		40	19	mg/L			12/24/19 13:59	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: W-1D
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2
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			01/06/20 15:45	1
Temperature	21.9	HF	1.0	1.0	Degrees C			01/06/20 15:45	1
Chloride	27		3.0	1.0	mg/L			01/13/20 19:47	1
Fluoride	0.17	J	0.50	0.17	mg/L			01/16/20 15:49	1
Sulfate	3000		100	21	mg/L			01/13/20 20:03	20
Total Dissolved Solids (TDS)	4400		40	19	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: W-2
Date Collected: 12/19/19 12:15
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3
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			01/06/20 15:49	1
Temperature	21.6	HF	1.0	1.0	Degrees C			01/06/20 15:49	1
Chloride	88		3.0	1.0	mg/L			01/13/20 20:19	1
Fluoride	ND	^	10	3.3	mg/L			01/13/20 20:36	20
Sulfate	4300		250	52	mg/L			01/15/20 13:42	50
Total Dissolved Solids (TDS)	7300		100	47	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: W-3
Date Collected: 12/19/19 13:35
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			01/06/20 15:54	1
Temperature	22.0	HF	1.0	1.0	Degrees C			01/06/20 15:54	1
Chloride	170		60	20	mg/L			01/13/20 22:31	20
Fluoride	ND	^	10	3.3	mg/L			01/13/20 22:31	20
Sulfate	7500		500	100	mg/L			01/15/20 14:00	100

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

General Chemistry (Continued)

Client Sample ID: W-3
Date Collected: 12/19/19 13:35
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	13000		100	47	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: W-4
Date Collected: 12/19/19 11:10
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5
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			01/06/20 16:09	1
Temperature	23.1	HF	1.0	1.0	Degrees C			01/06/20 16:09	1
Chloride	310		60	20	mg/L			01/13/20 23:53	20
Fluoride	ND		2.5	0.83	mg/L			01/16/20 16:08	5
Sulfate	13000		500	100	mg/L			01/15/20 14:35	100
Total Dissolved Solids (TDS)	20000		200	94	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: MW-6
Date Collected: 12/19/19 14:20
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.6	HF	0.1	0.1	SU			01/06/20 16:13	1
Temperature	22.3	HF	1.0	1.0	Degrees C			01/06/20 16:13	1
Chloride	64		3.0	1.0	mg/L			01/14/20 00:09	1
Fluoride	0.21	J	0.50	0.17	mg/L			01/16/20 16:27	1
Sulfate	3200		100	21	mg/L			01/14/20 00:26	20
Total Dissolved Solids (TDS)	4500		40	19	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: MW-7
Date Collected: 12/19/19 15:55
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			01/06/20 16:17	1
Temperature	21.9	HF	1.0	1.0	Degrees C			01/06/20 16:17	1
Chloride	170		3.0	1.0	mg/L			01/14/20 00:42	1
Fluoride	ND		0.50	0.17	mg/L			01/16/20 17:23	1
Sulfate	3400		100	21	mg/L			01/14/20 00:58	20
Total Dissolved Solids (TDS)	4700		40	19	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Client Sample ID: MW-7EB
Date Collected: 12/19/19 16:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.3	HF	0.1	0.1	SU			01/07/20 15:39	1
Temperature	24.1	HF	1.0	1.0	Degrees C			01/07/20 15:39	1
Chloride	ND		3.0	1.0	mg/L			01/14/20 01:48	1
Fluoride	ND	^	0.50	0.17	mg/L			01/14/20 01:48	1
Sulfate	1.5	J	5.0	1.0	mg/L			01/14/20 01:48	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/24/19 13:59	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/24/19 08:39	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

General Chemistry

Client Sample ID: MW-8
Date Collected: 12/19/19 17:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			01/06/20 16:30	1
Temperature	22.6	HF	1.0	1.0	Degrees C			01/06/20 16:30	1
Chloride	190		60	20	mg/L			01/14/20 02:37	20
Fluoride	ND		2.5	0.83	mg/L			01/16/20 17:42	5
Sulfate	7100		500	100	mg/L			01/15/20 16:20	100
Total Dissolved Solids (TDS)	12000		100	47	mg/L			12/24/19 13:59	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			12/24/19 08:39	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.117		0.0647	0.0655	1.00	0.0802	pCi/L	12/31/19 09:06	01/27/20 13:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					12/31/19 09:06	01/27/20 13:02	1

Client Sample ID: W-1D
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143		0.0717	0.0728	1.00	0.0870	pCi/L	12/31/19 09:06	01/27/20 13:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					12/31/19 09:06	01/27/20 13:02	1

Client Sample ID: W-2
Date Collected: 12/19/19 12:15
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0918	U	0.0680	0.0685	1.00	0.0991	pCi/L	12/31/19 09:06	01/27/20 13:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					12/31/19 09:06	01/27/20 13:03	1

Client Sample ID: W-3
Date Collected: 12/19/19 13:35
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0890	U	0.0634	0.0639	1.00	0.0899	pCi/L	12/31/19 09:06	01/27/20 13:03	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Carrier

Ba Carrier

%Yield

107

Qualifier

Limits

40 - 110

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Client Sample ID: W-4

Date Collected: 12/19/19 11:10

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5

Matrix: Water

Analyte

Radium-226

Result

0.135

Qualifier

Count
Uncert.

(2σ+/-)

0.0791

Total
Uncert.

(2σ+/-)

0.0800

RL

1.00

MDC

0.107

Unit

pCi/L

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Carrier

Ba Carrier

%Yield

104

Qualifier

Limits

40 - 110

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Client Sample ID: MW-6

Date Collected: 12/19/19 14:20

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6

Matrix: Water

Analyte

Radium-226

Result

-0.0178

Qualifier

U

Count
Uncert.

(2σ+/-)

0.0451

Total
Uncert.

(2σ+/-)

0.0451

RL

1.00

MDC

0.100

Unit

pCi/L

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Carrier

Ba Carrier

%Yield

104

Qualifier

Limits

40 - 110

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Client Sample ID: MW-7

Date Collected: 12/19/19 15:55

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7

Matrix: Water

Analyte

Radium-226

Result

0.0828

Qualifier

Count
Uncert.

(2σ+/-)

0.0573

Total
Uncert.

(2σ+/-)

0.0578

RL

1.00

MDC

0.0772

Unit

pCi/L

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Carrier

Ba Carrier

%Yield

105

Qualifier

Limits

40 - 110

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Client Sample ID: MW-7EB

Date Collected: 12/19/19 16:05

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8

Matrix: Water

Analyte

Radium-226

Result

0.0834

Qualifier

Count
Uncert.

(2σ+/-)

0.0562

Total
Uncert.

(2σ+/-)

0.0567

RL

1.00

MDC

0.0729

Unit

pCi/L

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Carrier

Ba Carrier

%Yield

102

Qualifier

Limits

40 - 110

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Client Sample ID: MW-8

Date Collected: 12/19/19 17:05

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9

Matrix: Water

Analyte

Radium-226

Result

0.0455

Qualifier

U

Count
Uncert.

(2σ+/-)

0.0626

Total
Uncert.

(2σ+/-)

0.0627

RL

1.00

MDC

0.106

Unit

pCi/L

Prepared

12/31/19 09:06

Analyzed

01/27/20 13:03

Dil Fac

1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	12/31/19 09:06	01/27/20 13:03	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1

Date Collected: 12/19/19 09:40

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.481		0.237	0.241	1.00	0.345	pCi/L	12/31/19 11:01	01/14/20 17:00	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	107		40 - 110	12/31/19 11:01	01/14/20 17:00	1				
Y Carrier	86.0		40 - 110	12/31/19 11:01	01/14/20 17:00	1				

Client Sample ID: W-1D

Date Collected: 12/19/19 09:40

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.503		0.247	0.252	1.00	0.361	pCi/L	12/31/19 11:01	01/14/20 17:00	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	108		40 - 110	12/31/19 11:01	01/14/20 17:00	1				
Y Carrier	88.1		40 - 110	12/31/19 11:01	01/14/20 17:00	1				

Client Sample ID: W-2

Date Collected: 12/19/19 12:15

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.127	U	0.243	0.243	1.00	0.413	pCi/L	12/31/19 11:01	01/14/20 17:00	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	105		40 - 110	12/31/19 11:01	01/14/20 17:00	1				
Y Carrier	86.0		40 - 110	12/31/19 11:01	01/14/20 17:00	1				

Client Sample ID: W-3

Date Collected: 12/19/19 13:35

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4

Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.583		0.249	0.255	1.00	0.349	pCi/L	12/31/19 11:01	01/14/20 17:00	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	107		40 - 110	12/31/19 11:01	01/14/20 17:00	1				
Y Carrier	87.2		40 - 110	12/31/19 11:01	01/14/20 17:00	1				

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-4
Date Collected: 12/19/19 11:10
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.475		0.297	0.300	1.00	0.461	pCi/L	12/31/19 11:01	01/14/20 17:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					12/31/19 11:01	01/14/20 17:01	1
Y Carrier	89.9		40 - 110					12/31/19 11:01	01/14/20 17:01	1

Client Sample ID: MW-6
Date Collected: 12/19/19 14:20
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.329	U	0.244	0.246	1.00	0.383	pCi/L	12/31/19 11:01	01/14/20 17:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					12/31/19 11:01	01/14/20 17:01	1
Y Carrier	88.1		40 - 110					12/31/19 11:01	01/14/20 17:01	1

Client Sample ID: MW-7
Date Collected: 12/19/19 15:55
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.407		0.234	0.237	1.00	0.351	pCi/L	12/31/19 11:01	01/14/20 17:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					12/31/19 11:01	01/14/20 17:01	1
Y Carrier	87.8		40 - 110					12/31/19 11:01	01/14/20 17:01	1

Client Sample ID: MW-7EB
Date Collected: 12/19/19 16:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.315	U	0.246	0.247	1.00	0.388	pCi/L	12/31/19 11:01	01/14/20 17:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					12/31/19 11:01	01/14/20 17:01	1
Y Carrier	87.8		40 - 110					12/31/19 11:01	01/14/20 17:01	1

Client Sample ID: MW-8
Date Collected: 12/19/19 17:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.141	U	0.278	0.278	1.00	0.474	pCi/L	12/31/19 11:01	01/14/20 16:48	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	12/31/19 11:01	01/14/20 16:48	1
Y Carrier	88.1		40 - 110	12/31/19 11:01	01/14/20 16:48	1

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

Client Sample ID: W-1
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.598		0.246	0.250	5.00	0.345	pCi/L		01/28/20 09:36	1

Client Sample ID: W-1D
Date Collected: 12/19/19 09:40
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.646		0.257	0.262	5.00	0.361	pCi/L		01/28/20 09:36	1

Client Sample ID: W-2
Date Collected: 12/19/19 12:15
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.218	U	0.252	0.252	5.00	0.413	pCi/L		01/28/20 09:36	1

Client Sample ID: W-3
Date Collected: 12/19/19 13:35
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.672		0.257	0.263	5.00	0.349	pCi/L		01/28/20 09:36	1

Client Sample ID: W-4
Date Collected: 12/19/19 11:10
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.610		0.307	0.310	5.00	0.461	pCi/L		01/28/20 09:36	1

Eurofins TestAmerica, Denver

Client Sample Results

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

Job ID: 280-132316-1

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

Client Sample ID: MW-6
Date Collected: 12/19/19 14:20
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.311	U	0.248	0.250	5.00	0.383	pCi/L		01/28/20 09:36	1

Client Sample ID: MW-7
Date Collected: 12/19/19 15:55
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.490		0.241	0.244	5.00	0.351	pCi/L		01/28/20 09:36	1

Client Sample ID: MW-7EB
Date Collected: 12/19/19 16:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.398		0.252	0.253	5.00	0.388	pCi/L		01/28/20 09:36	1

Client Sample ID: MW-8
Date Collected: 12/19/19 17:05
Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.186	U	0.285	0.285	5.00	0.474	pCi/L		01/28/20 09:36	1

QC Sample Results

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

Job ID: 280-132316-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-417639/1-A
Matrix: Water
Analysis Batch: 417955

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 417639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		12/30/19 14:00	12/31/19 11:18	1

Lab Sample ID: LCS 240-417639/2-A
Matrix: Water
Analysis Batch: 417955

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 417639

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.00		mg/L		100	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-417639/1-A
Matrix: Water
Analysis Batch: 417956

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 417639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0050	0.0022	mg/L		12/30/19 14:00	12/31/19 13:46	1
Calcium	ND		1.0	0.58	mg/L		12/30/19 14:00	12/31/19 13:46	1
Cadmium	ND		0.0010	0.00020	mg/L		12/30/19 14:00	12/31/19 13:46	1
Cobalt	ND		0.0010	0.00019	mg/L		12/30/19 14:00	12/31/19 13:46	1
Selenium	ND		0.0050	0.00089	mg/L		12/30/19 14:00	12/31/19 13:46	1

Lab Sample ID: MB 240-417639/1-A
Matrix: Water
Analysis Batch: 418033

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 417639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		0.010	0.0011	mg/L		12/30/19 14:00	01/06/20 11:51	1
Lithium	ND		0.0080	0.0017	mg/L		12/30/19 14:00	01/06/20 11:51	1

Lab Sample ID: LCS 240-417639/3-A
Matrix: Water
Analysis Batch: 417956

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 417639

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	1.00	0.985		mg/L		98	80 - 120
Calcium	25.0	25.1		mg/L		100	80 - 120
Cadmium	0.500	0.500		mg/L		100	80 - 120
Cobalt	0.500	0.519		mg/L		104	80 - 120
Selenium	1.00	0.993		mg/L		99	80 - 120

Lab Sample ID: LCS 240-417639/3-A
Matrix: Water
Analysis Batch: 418033

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 417639

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Molybdenum	0.500	0.475		mg/L		95	80 - 120
Lithium	0.500	0.451		mg/L		90	80 - 120

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-132316-1

Method: 9040B - pH

Lab Sample ID: LCS 280-482258/4

Matrix: Water

Analysis Batch: 482258

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 280-482367/4

Matrix: Water

Analysis Batch: 482367

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 280-482774/6

Matrix: Water

Analysis Batch: 482774

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	1.0	mg/L			01/13/20 11:30	1
Fluoride	ND	^	0.50	0.17	mg/L			01/13/20 11:30	1
Sulfate	ND		5.0	1.0	mg/L			01/13/20 11:30	1

Lab Sample ID: LCS 280-482774/4

Matrix: Water

Analysis Batch: 482774

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	107		mg/L		107	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-482774/5

Matrix: Water

Analysis Batch: 482774

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	107		mg/L		107	90 - 110	0	10
Sulfate	100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-482774/3

Matrix: Water

Analysis Batch: 482774

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.29		mg/L		86	50 - 150
Fluoride	0.500	0.564		mg/L		113	50 - 150
Sulfate	5.00	4.68	J	mg/L		94	50 - 150

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-132316-1

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

Lab Sample ID: 280-132316-4 MS

Matrix: Water

Analysis Batch: 482774

Client Sample ID: W-3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	170		1000	1340		mg/L		117	80 - 120
Chloride	170		1000	1340		mg/L		117	80 - 120

Lab Sample ID: 280-132316-4 MSD

Matrix: Water

Analysis Batch: 482774

Client Sample ID: W-3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	170		1000	1320		mg/L		115	80 - 120	1	20
Chloride	170		1000	1320		mg/L		115	80 - 120	1	20

Lab Sample ID: 280-132316-4 DU

Matrix: Water

Analysis Batch: 482774

Client Sample ID: W-3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	170		158		mg/L		7	15
Chloride	170		158		mg/L		7	15
Fluoride	ND	^	ND	^	mg/L		NC	15
Fluoride	ND	^	ND	^	mg/L		NC	15

Lab Sample ID: MB 280-482902/13

Matrix: Water

Analysis Batch: 482902

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	1.0	mg/L			01/14/20 16:50	1
Sulfate	ND		5.0	1.0	mg/L			01/14/20 16:50	1

Lab Sample ID: LCS 280-482902/11

Matrix: Water

Analysis Batch: 482902

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	105		mg/L		105	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-482902/12

Matrix: Water

Analysis Batch: 482902

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	105		mg/L		105	90 - 110	0	10
Sulfate	100	100		mg/L		100	90 - 110	1	10

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-132316-1

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

Lab Sample ID: MRL 280-482902/10

Matrix: Water

Analysis Batch: 482902

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.48		mg/L		90	50 - 150
Fluoride	0.500	0.566		mg/L		113	50 - 150
Sulfate	5.00	4.37	J	mg/L		87	50 - 150

Lab Sample ID: 280-132316-1 MS

Matrix: Water

Analysis Batch: 482902

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	29	F1	50.0	92.8	F1	mg/L		127	80 - 120
Chloride	29	F1	50.0	92.8	F1	mg/L		127	80 - 120

Lab Sample ID: 280-132316-1 MSD

Matrix: Water

Analysis Batch: 482902

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	29	F1	50.0	93.1	F1	mg/L		127	80 - 120	0	20
Chloride	29	F1	50.0	93.1	F1	mg/L		127	80 - 120	0	20

Lab Sample ID: 280-132316-1 DU

Matrix: Water

Analysis Batch: 482902

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	29	F1	29.5		mg/L		0.2	15
Chloride	29	F1	29.5		mg/L		0.2	15

Lab Sample ID: MB 280-483099/6

Matrix: Water

Analysis Batch: 483099

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			01/16/20 10:27	1

Lab Sample ID: LCS 280-483099/4

Matrix: Water

Analysis Batch: 483099

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	4.98		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-483099/5

Matrix: Water

Analysis Batch: 483099

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	4.96		mg/L		99	90 - 110	1	10

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-132316-1

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

Lab Sample ID: MRL 280-483099/3

Matrix: Water

Analysis Batch: 483099

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.500	0.484	J	mg/L		97	50 - 150

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

Lab Sample ID: MB 280-481566/1

Matrix: Water

Analysis Batch: 481566

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			12/24/19 13:59	1

Lab Sample ID: LCS 280-481566/2

Matrix: Water

Analysis Batch: 481566

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	93 - 110

Lab Sample ID: LCSD 280-481566/3

Matrix: Water

Analysis Batch: 481566

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	497		mg/L		99	93 - 110	1	20

Lab Sample ID: 280-132316-1 DU

Matrix: Water

Analysis Batch: 481566

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4600		4300		mg/L		6	10

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

Lab Sample ID: MB 280-481486/1

Matrix: Water

Analysis Batch: 481486

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			12/24/19 08:39	1

Lab Sample ID: LCS 280-481486/2

Matrix: Water

Analysis Batch: 481486

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	84.4		mg/L		84	79 - 114

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-132316-1

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

Lab Sample ID: LCSD 280-481486/3

Matrix: Water

Analysis Batch: 481486

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	92.4		mg/L		92	79 - 114	9	20

Lab Sample ID: 280-132316-1 DU

Matrix: Water

Analysis Batch: 481486

Client Sample ID: W-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	4.8		ND		mg/L		NC	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455705/22-B

Matrix: Water

Analysis Batch: 458192

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455705

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.3893		0.114	0.119	1.00	0.109	pCi/L	12/31/19 09:06	01/27/20 13:04	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	12/31/19 09:06	01/27/20 13:04	1

Lab Sample ID: LCS 160-455705/1-A

Matrix: Water

Analysis Batch: 458192

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 455705

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.3	9.173		0.960	1.00	0.0876	pCi/L	81	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110			

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-455727/22-A

Matrix: Water

Analysis Batch: 456742

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455727

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09351	U	0.211	0.211	1.00	0.362	pCi/L	12/31/19 11:01	01/14/20 16:49	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	12/31/19 11:01	01/14/20 16:49	1
Y Carrier	88.7		40 - 110	12/31/19 11:01	01/14/20 16:49	1

Eurofins TestAmerica, Denver

QC Sample Results

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

Job ID: 280-132316-1

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

Lab Sample ID: LCS 160-455727/1-A

Matrix: Water

Analysis Batch: 456741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 455727

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.20	9.320		1.08	1.00	0.346	pCi/L	101	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	105		40 - 110
Y Carrier	86.6		40 - 110

QC Association Summary

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

Job ID: 280-132316-1

Metals

Prep Batch: 417639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total Recoverable	Water	3005A	
280-132316-2	W-1D	Total Recoverable	Water	3005A	
280-132316-3	W-2	Total Recoverable	Water	3005A	
280-132316-4	W-3	Total Recoverable	Water	3005A	
280-132316-5	W-4	Total Recoverable	Water	3005A	
280-132316-6	MW-6	Total Recoverable	Water	3005A	
280-132316-7	MW-7	Total Recoverable	Water	3005A	
280-132316-8	MW-7EB	Total Recoverable	Water	3005A	
280-132316-9	MW-8	Total Recoverable	Water	3005A	
MB 240-417639/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-417639/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-417639/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 417955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total Recoverable	Water	6010C	417639
280-132316-2	W-1D	Total Recoverable	Water	6010C	417639
280-132316-3	W-2	Total Recoverable	Water	6010C	417639
280-132316-4	W-3	Total Recoverable	Water	6010C	417639
280-132316-5	W-4	Total Recoverable	Water	6010C	417639
280-132316-8	MW-7EB	Total Recoverable	Water	6010C	417639
280-132316-9	MW-8	Total Recoverable	Water	6010C	417639
MB 240-417639/1-A	Method Blank	Total Recoverable	Water	6010C	417639
LCS 240-417639/2-A	Lab Control Sample	Total Recoverable	Water	6010C	417639

Analysis Batch: 417956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total Recoverable	Water	6020A	417639
280-132316-2	W-1D	Total Recoverable	Water	6020A	417639
280-132316-3	W-2	Total Recoverable	Water	6020A	417639
280-132316-4	W-3	Total Recoverable	Water	6020A	417639
280-132316-5	W-4	Total Recoverable	Water	6020A	417639
280-132316-6	MW-6	Total Recoverable	Water	6020A	417639
280-132316-7	MW-7	Total Recoverable	Water	6020A	417639
280-132316-8	MW-7EB	Total Recoverable	Water	6020A	417639
280-132316-9	MW-8	Total Recoverable	Water	6020A	417639
MB 240-417639/1-A	Method Blank	Total Recoverable	Water	6020A	417639
LCS 240-417639/3-A	Lab Control Sample	Total Recoverable	Water	6020A	417639

Analysis Batch: 418033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total Recoverable	Water	6020A	417639
280-132316-2	W-1D	Total Recoverable	Water	6020A	417639
280-132316-3	W-2	Total Recoverable	Water	6020A	417639
280-132316-4	W-3	Total Recoverable	Water	6020A	417639
280-132316-5	W-4	Total Recoverable	Water	6020A	417639
280-132316-6	MW-6	Total Recoverable	Water	6020A	417639
280-132316-7	MW-7	Total Recoverable	Water	6020A	417639
280-132316-8	MW-7EB	Total Recoverable	Water	6020A	417639
280-132316-9	MW-8	Total Recoverable	Water	6020A	417639
MB 240-417639/1-A	Method Blank	Total Recoverable	Water	6020A	417639

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QC Association Summary

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

Job ID: 280-132316-1

Metals (Continued)

Analysis Batch: 418033 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-417639/3-A	Lab Control Sample	Total Recoverable	Water	6020A	417639

Analysis Batch: 418075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-6	MW-6	Total Recoverable	Water	6010C	417639
280-132316-7	MW-7	Total Recoverable	Water	6010C	417639

General Chemistry

Analysis Batch: 481486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	SM 2540D	
280-132316-2	W-1D	Total/NA	Water	SM 2540D	
280-132316-3	W-2	Total/NA	Water	SM 2540D	
280-132316-4	W-3	Total/NA	Water	SM 2540D	
280-132316-5	W-4	Total/NA	Water	SM 2540D	
280-132316-6	MW-6	Total/NA	Water	SM 2540D	
280-132316-7	MW-7	Total/NA	Water	SM 2540D	
280-132316-8	MW-7EB	Total/NA	Water	SM 2540D	
280-132316-9	MW-8	Total/NA	Water	SM 2540D	
MB 280-481486/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-481486/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-481486/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-132316-1 DU	W-1	Total/NA	Water	SM 2540D	

Analysis Batch: 481566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	SM 2540C	
280-132316-2	W-1D	Total/NA	Water	SM 2540C	
280-132316-3	W-2	Total/NA	Water	SM 2540C	
280-132316-4	W-3	Total/NA	Water	SM 2540C	
280-132316-5	W-4	Total/NA	Water	SM 2540C	
280-132316-6	MW-6	Total/NA	Water	SM 2540C	
280-132316-7	MW-7	Total/NA	Water	SM 2540C	
280-132316-8	MW-7EB	Total/NA	Water	SM 2540C	
280-132316-9	MW-8	Total/NA	Water	SM 2540C	
MB 280-481566/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-481566/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-481566/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-132316-1 DU	W-1	Total/NA	Water	SM 2540C	

Analysis Batch: 482258

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	9040B	
280-132316-2	W-1D	Total/NA	Water	9040B	
280-132316-3	W-2	Total/NA	Water	9040B	
280-132316-4	W-3	Total/NA	Water	9040B	
280-132316-5	W-4	Total/NA	Water	9040B	
280-132316-6	MW-6	Total/NA	Water	9040B	
280-132316-7	MW-7	Total/NA	Water	9040B	
280-132316-9	MW-8	Total/NA	Water	9040B	

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QC Association Summary

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

Job ID: 280-132316-1

General Chemistry (Continued)

Analysis Batch: 482258 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-482258/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 482367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-8	MW-7EB	Total/NA	Water	9040B	
LCS 280-482367/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 482774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	9056A	
280-132316-1	W-1	Total/NA	Water	9056A	
280-132316-2	W-1D	Total/NA	Water	9056A	
280-132316-2	W-1D	Total/NA	Water	9056A	
280-132316-3	W-2	Total/NA	Water	9056A	
280-132316-3	W-2	Total/NA	Water	9056A	
280-132316-4	W-3	Total/NA	Water	9056A	
280-132316-5	W-4	Total/NA	Water	9056A	
280-132316-6	MW-6	Total/NA	Water	9056A	
280-132316-6	MW-6	Total/NA	Water	9056A	
280-132316-7	MW-7	Total/NA	Water	9056A	
280-132316-7	MW-7	Total/NA	Water	9056A	
280-132316-8	MW-7EB	Total/NA	Water	9056A	
280-132316-9	MW-8	Total/NA	Water	9056A	
MB 280-482774/6	Method Blank	Total/NA	Water	9056A	
LCS 280-482774/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-482774/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-482774/3	Lab Control Sample	Total/NA	Water	9056A	
280-132316-4 MS	W-3	Total/NA	Water	9056A	
280-132316-4 MSD	W-3	Total/NA	Water	9056A	
280-132316-4 DU	W-3	Total/NA	Water	9056A	

Analysis Batch: 482902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-3	W-2	Total/NA	Water	9056A	
280-132316-4	W-3	Total/NA	Water	9056A	
280-132316-5	W-4	Total/NA	Water	9056A	
280-132316-9	MW-8	Total/NA	Water	9056A	
MB 280-482902/13	Method Blank	Total/NA	Water	9056A	
LCS 280-482902/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-482902/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-482902/10	Lab Control Sample	Total/NA	Water	9056A	
280-132316-1 MS	W-1	Total/NA	Water	9056A	
280-132316-1 MSD	W-1	Total/NA	Water	9056A	
280-132316-1 DU	W-1	Total/NA	Water	9056A	

Analysis Batch: 483099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	9056A	
280-132316-2	W-1D	Total/NA	Water	9056A	
280-132316-5	W-4	Total/NA	Water	9056A	
280-132316-6	MW-6	Total/NA	Water	9056A	

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QC Association Summary

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

Job ID: 280-132316-1

General Chemistry (Continued)

Analysis Batch: 483099 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-7	MW-7	Total/NA	Water	9056A	
280-132316-9	MW-8	Total/NA	Water	9056A	
MB 280-483099/6	Method Blank	Total/NA	Water	9056A	
LCS 280-483099/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-483099/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-483099/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 455705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	PrecSep-21	
280-132316-2	W-1D	Total/NA	Water	PrecSep-21	
280-132316-3	W-2	Total/NA	Water	PrecSep-21	
280-132316-4	W-3	Total/NA	Water	PrecSep-21	
280-132316-5	W-4	Total/NA	Water	PrecSep-21	
280-132316-6	MW-6	Total/NA	Water	PrecSep-21	
280-132316-7	MW-7	Total/NA	Water	PrecSep-21	
280-132316-8	MW-7EB	Total/NA	Water	PrecSep-21	
280-132316-9	MW-8	Total/NA	Water	PrecSep-21	
MB 160-455705/22-B	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455705/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 455727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-132316-1	W-1	Total/NA	Water	PrecSep_0	
280-132316-2	W-1D	Total/NA	Water	PrecSep_0	
280-132316-3	W-2	Total/NA	Water	PrecSep_0	
280-132316-4	W-3	Total/NA	Water	PrecSep_0	
280-132316-5	W-4	Total/NA	Water	PrecSep_0	
280-132316-6	MW-6	Total/NA	Water	PrecSep_0	
280-132316-7	MW-7	Total/NA	Water	PrecSep_0	
280-132316-8	MW-7EB	Total/NA	Water	PrecSep_0	
280-132316-9	MW-8	Total/NA	Water	PrecSep_0	
MB 160-455727/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455727/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

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

Job ID: 280-132316-1

Client Sample ID: W-1

Date Collected: 12/19/19 09:40

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-1

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:01	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:02	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:23	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 15:40	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	482774	01/13/20 19:14	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/13/20 19:30	JAP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	483099	01/16/20 15:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			999.83 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:02	AJD	TAL SL
Total/NA	Prep	PrecSep_0			999.83 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Client Sample ID: W-1D

Date Collected: 12/19/19 09:40

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-2

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:06	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:06	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:26	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 15:45	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	482774	01/13/20 19:47	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/13/20 20:03	JAP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	483099	01/16/20 15:49	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:02	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

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Lab Chronicle

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

Job ID: 280-132316-1

Client Sample ID: W-2

Date Collected: 12/19/19 12:15

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-3

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:11	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:11	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:33	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 15:49	SPG	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	482902	01/15/20 13:42	JAP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	482774	01/13/20 20:19	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/13/20 20:36	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			999.87 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			999.87 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Client Sample ID: W-3

Date Collected: 12/19/19 13:35

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-4

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:15	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:15	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:35	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 15:54	SPG	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	482902	01/15/20 14:00	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/13/20 22:31	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.19 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.19 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

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Lab Chronicle

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

Job ID: 280-132316-1

Client Sample ID: W-4

Date Collected: 12/19/19 11:10

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-5

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:20	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:19	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:37	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 16:09	SPG	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	482902	01/15/20 14:35	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/13/20 23:53	JAP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	483099	01/16/20 16:08	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.04 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.04 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:01	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Client Sample ID: MW-6

Date Collected: 12/19/19 14:20

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-6

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		10			418075	01/06/20 10:50	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:24	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		5			418033	01/06/20 12:40	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 16:13	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	482774	01/14/20 00:09	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/14/20 00:26	JAP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	483099	01/16/20 16:27	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			999.99 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			999.99 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:01	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Eurofins TestAmerica, Denver

Lab Chronicle

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

Job ID: 280-132316-1

Client Sample ID: MW-7

Date Collected: 12/19/19 15:55

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-7

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		10			418075	01/06/20 10:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:28	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		5			418033	01/06/20 12:42	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 16:17	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	482774	01/14/20 00:42	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/14/20 00:58	JAP	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	483099	01/16/20 17:23	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:01	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Client Sample ID: MW-7EB

Date Collected: 12/19/19 16:05

Date Received: 12/20/19 10:29

Lab Sample ID: 280-132316-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:42	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:41	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:44	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482367	01/07/20 15:39	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	482774	01/14/20 01:48	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456741	01/14/20 17:01	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Eurofins TestAmerica, Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-132316-1

Client Sample ID: MW-8

Lab Sample ID: 280-132316-9

Date Collected: 12/19/19 17:05

Matrix: Water

Date Received: 12/20/19 10:29

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	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			417955	12/31/19 12:47	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			417956	12/31/19 15:45	DTN	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	417639	12/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			418033	01/06/20 12:46	RKT	TAL CAN
Total/NA	Analysis	9040B		1			482258	01/06/20 16:30	SPG	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	482902	01/15/20 16:20	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	482774	01/14/20 02:37	JAP	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	483099	01/16/20 17:42	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	481566	12/24/19 13:59	ECL	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	481486	12/24/19 08:39	ECL	TAL DEN
Total/NA	Prep	PrecSep-21			750.11 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	9315		1			458192	01/27/20 13:03	AJD	TAL SL
Total/NA	Prep	PrecSep_0			750.11 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	9320		1			456742	01/14/20 16:48	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			458320	01/28/20 09:36	SMP	TAL SL

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-132316-1

Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature
9056A		Water	Chloride
9056A		Water	Fluoride
9056A		Water	Sulfate

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-20
Connecticut	State	PH-0590	12-31-19 *
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19 *
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-132316-1

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver

Client Information		Sample Information		Analysis Requested		Preservation Codes		Special Instructions/Note	
Client Contact:	Tara Kent	Sample ID:	7209337496	Analysis Requested:		Preservation Codes:		Special Instructions/Note:	
Client Name:	Molly Reeves	Sample Description:		Due Date Requested:		A. HCl			
Company:	HDR Inc	Sample Date:		TAT Requested (days):		B. NaOH			
Address:	9781 S. Meridian Blvd Suite 400	Sample Time:		PO #:		C. 2% Acetic			
City:	CO, 80112	Sample Date:		DEN-018		D. Nitric Acid			
State, Zip:		Sample Time:		XO #:		E. Na2SO4			
Phone:	734-263-7138(Tel)	Sample Date:		Project #:		F. NaOH			
Email:	Molly.Reeves@hdrinc.com	Sample Time:		28014377		G. Ascorbic Acid			
Project Name:	Xcel Energy GW CCR Monitoring - Hayden	Sample Date:		SECURE:		H. Ascorbic Acid			
Site:	Colorado	Sample Time:				I. Ice			
Sample Identification	W-1	Sample Date	12-19-19	Sample Time	0940	Sample Type	G=grab	Matrix	W
	W-1D	Sample Date	12-19-19	Sample Time	0940	Sample Type	G=grab	Matrix	W
	W-2	Sample Date	12-19-19	Sample Time	1215	Sample Type	G=grab	Matrix	W
	W-3	Sample Date	12-19-19	Sample Time	1335	Sample Type	G=grab	Matrix	W
	W-4	Sample Date	12-19-19	Sample Time	1110	Sample Type	G=grab	Matrix	W
	MW-6	Sample Date	12-19-19	Sample Time	1420	Sample Type	G=grab	Matrix	W
	MW-7	Sample Date	12-19-19	Sample Time	1555	Sample Type	G=grab	Matrix	W
	MW-7EB	Sample Date	12-19-19	Sample Time	1605	Sample Type	G=grab	Matrix	W
	MW-8	Sample Date	12-19-19	Sample Time	1705	Sample Type	G=grab	Matrix	W

Possible Hazard Identification		Deliverable Requested		Empty Kit Relinquished by:	
☒ Non-Hazard	☐ Flammable	☐ Skin Irritant	☐ Poison B	☐ Unknown	☐ Radiological
Deliverable Requested I, II, III, IV, Other (specify)		Empty Kit Relinquished by:		Relinquished by:	
Tara Kent		Tara Kent		Tara Kent	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/19 1029	
Company:		Company:		Company:	
HDR		HDR		HDR	
Received by:		Received by:		Received by:	
Molly Reeves		Molly Reeves		Molly Reeves	
Date/Time:		Date/Time:		Date/Time:	
12/20/19 1029		12/20/19 1029		12/20/1	

Chain of Custody Record



Eurofins TestAmerica
 Environmental Testing
 TestAmerica

Client Information (Sub Contract Lab)		Sample:		Lab Pkt:		Carrier Tracking No(s):		COC No:	
Client Contact: Shipping/Receiving		Phone:		Bandy, Darlene F				280-511087.1	
Company:		E-Mail:		E-Mail:		State of Origin:		Page:	
TestAmerica Laboratories, Inc.				darlene.bandy@testamericainc.com		Colorado		Page 1 of 1	
Address:		Due Date Requested:		Job #:		Preservation Codes:		Special Instructions/Note:	
13715 Ridder Trail North,		1/21/2020		280-132316-1		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 Other:			
City:		TAI Requested (days):		DoD - A2LA					
Earth City									
State, Zip:									
MO, 63045									
Phone:									
314-298-8566(Tel) 314-298-8757(Fax)									
Email:									
Project Name:									
Xcel Energy GW CCR Monitoring - Hayden									
Site:									
Xcel Energy CCR - Hayden Station									
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=Water, S=Solid, T=Traceable)	
W-1 (280-132316-1)		12/19/19		09:40		Mountain		Water	
W-1 D (280-132316-2)		12/19/19		09:40		Mountain		Water	
W-2 (280-132316-3)		12/19/19		12:15		Mountain		Water	
W-3 (280-132316-4)		12/19/19		13:35		Mountain		Water	
W-4 (280-132316-5)		12/19/19		11:10		Mountain		Water	
MW-6 (280-132316-6)		12/19/19		14:20		Mountain		Water	
MW-7 (280-132316-7)		12/19/19		15:55		Mountain		Water	
MW-7EB (280-132316-8)		12/19/19		16:05		Mountain		Water	
MW-8 (280-132316-9)		12/19/19		17:05		Mountain		Water	
Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our 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/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any charges to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditation are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.									
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4									
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/OC Requirements:									
Empty Kit Relinquished by: Relinquished by: <i>Tom Jones</i> Date: 12/20/19 11:20 Relinquished by: <i>Michael Flurn</i> Date: 12-27-19 05:15 Relinquished by: <i>Michael Flurn</i> Date: 12-27-19 05:15 Relinquished by: <i>Michael Flurn</i> Date: 12-27-19 05:15 Custody Seal No: <i>13</i> A Yes A No									

[illegible]

Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login # : _____

Canton Facility

Client ETA Denver Site Name _____ Cooler unpacked by: [Signature]
 Cooler Received on 12-27-19 Opened on 12-27-19
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time

Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 1.5 °C Corrected Cooler Temp. 2.2 °C
 IR GUN #IR-11 (CF +0.9 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
- If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC995364
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-132316-1

Login Number: 132316

List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Zimmerman, Steven M

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-132316-1

Login Number: 132316

List Number: 3

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 12/27/19 12:57 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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	0.1
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?	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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-132316-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)				
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)					
280-132316-1	W-1	107					
280-132316-2	W-1D	108					
280-132316-3	W-2	105					
280-132316-4	W-3	107					
280-132316-5	W-4	104					
280-132316-6	MW-6	104					
280-132316-7	MW-7	105					
280-132316-8	MW-7EB	102					
280-132316-9	MW-8	106					
LCS 160-455705/1-A	Lab Control Sample	105					
MB 160-455705/22-B	Method Blank	105					
Tracer/Carrier Legend							
Ba Carrier = Ba Carrier							

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)				
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)				
280-132316-1	W-1	107	86.0				
280-132316-2	W-1D	108	88.1				
280-132316-3	W-2	105	86.0				
280-132316-4	W-3	107	87.2				
280-132316-5	W-4	104	89.9				
280-132316-6	MW-6	104	88.1				
280-132316-7	MW-7	105	87.8				
280-132316-8	MW-7EB	102	87.8				
280-132316-9	MW-8	106	88.1				
LCS 160-455727/1-A	Lab Control Sample	105	86.6				
MB 160-455727/22-A	Method Blank	105	88.7				
Tracer/Carrier Legend							
Ba Carrier = Ba Carrier							
Y Carrier = Y Carrier							

ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

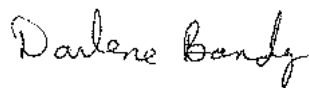
Laboratory Job ID: 280-137752-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden
Revision: 1

For:

HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:
8/6/2020 10:48:13 AM

Darlene Bandy, Project Manager I
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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Job ID: 280-137752-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-137752-1

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 - 8/5/2020

This revision was created in order to add the remaining analytes for APP IV, as these samples require all of the APP III and APP IV analytes instead of the historical analytes for these samples. The narrative for 6020A has been updated.

RECEIPT

The samples were received on 6/17/2020 3:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.4° C, 5.0° C and 5.3° C.

TOTAL RECOVERABLE METALS

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/23/2020 and analyzed on 06/24/2020 and 06/25/2020.

Samples MW-6 (280-137752-7)[5X] and MW-7 (280-137752-8)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 06/23/2020 and analyzed on 06/24/2020.

Thallium was detected in method blank MB 240-439603/1-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 analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for total mercury in accordance

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Job ID: 280-137752-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

with EPA SW-846 Methods 7470A. The samples were prepared on 06/29/2020 and analyzed on 06/30/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 06/18/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SUSPENDED SOLIDS

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 06/18/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9040B. The samples were analyzed on 06/17/2020 and 06/18/2020.

The following sample did not equilibrate to 0.05 pH units after three measurements: W-2EB (280-137752-4). This was observed in a previous pH analysis thus the sample was not rerun.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 07/08/2020, 07/09/2020 and 07/10/2020.

Samples W-1 (280-137752-1)[20X], W-1D (280-137752-2)[20X], W-2 (280-137752-3)[50X], W-3 (280-137752-5)[100X], W-3 (280-137752-5)[2X], W-4 (280-137752-6)[100X], W-4 (280-137752-6)[20X], MW-6 (280-137752-7)[20X], MW-7 (280-137752-8)[20X], MW-8 (280-137752-9)[100X] and MW-8 (280-137752-9)[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 W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 06/23/2020 and analyzed on 07/15/2020.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The following samples were prepared at a reduced aliquot to insure sufficient volume remains if needed for analysis: W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Job ID: 280-137752-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

RADIUM-228

Samples W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 06/23/2020 and analyzed on 07/01/2020.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The following samples were prepared at a reduced aliquot to insure sufficient volume remains if needed for analysis: W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9).

The detection goal was not met for the following samples due to insufficient sample available for analysis: MW-6 (280-137752-7). 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 W-1 (280-137752-1), W-1D (280-137752-2), W-2 (280-137752-3), W-2EB (280-137752-4), W-3 (280-137752-5), W-4 (280-137752-6), MW-6 (280-137752-7), MW-7 (280-137752-8) and MW-8 (280-137752-9) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 07/17/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: W-1

Lab Sample ID: 280-137752-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.64		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0089		0.0050	0.0022	mg/L	1		6020A	Recoverable Total
Calcium	330		1.0	0.58	mg/L	1		6020A	Recoverable Total
Cobalt	0.00080	J	0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Lithium	0.29		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0029	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	22		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	3.4		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	2800		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4200		40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-1D

Lab Sample ID: 280-137752-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.56		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0078		0.0050	0.0022	mg/L	1		6020A	Recoverable Total
Calcium	290		1.0	0.58	mg/L	1		6020A	Recoverable Total
Cobalt	0.00070	J	0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Lithium	0.25		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0025	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
Selenium	0.010		0.0050	0.00089	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	22		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	3.3		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	2800		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	3800		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-137752-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	9.3		0.10	0.023	mg/L	1		6010C	Total
Barium	0.0058		0.0050	0.0022	mg/L	1		6020A	Recoverable Total
Calcium	350		1.0	0.58	mg/L	1		6020A	Recoverable Total

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: W-2 (Continued)

Lab Sample ID: 280-137752-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.0034		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.62		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0034	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	85		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	5.4		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	4100		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	6300		100	47	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-2EB

Lab Sample ID: 280-137752-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	7.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	28		10	4.7	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-137752-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.87		0.10	0.023	mg/L	1		6010C	Total Recoverable
Barium	0.0079		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00031	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Calcium	340		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0026		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	1.2		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.014		0.0050	0.00089	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	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	200		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	13		1.0	0.33	mg/L	2		9056A	Total/NA
Sulfate	7500		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	11000		200	94	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: W-4

Lab Sample ID: 280-137752-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1.1		0.10	0.023	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: W-4 (Continued)

Lab Sample ID: 280-137752-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0077		0.0050	0.0022	mg/L	1		6020A	Total
Cadmium	0.00021	J	0.0010	0.00020	mg/L	1		6020A	Recoverable Total
Calcium	320		1.0	0.58	mg/L	1		6020A	Recoverable Total
Cobalt	0.0066		0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Lithium	0.72		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0027	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	7.5	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	280		60	20	mg/L	20		9056A	Total/NA
Fluoride	26		10	3.3	mg/L	20		9056A	Total/NA
Sulfate	13000		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	16000		1000	470	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.4		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 280-137752-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	44		0.50	0.12	mg/L	5		6010C	Total
Barium	0.0052		0.0050	0.0022	mg/L	1		6020A	Recoverable Total
Calcium	380		1.0	0.58	mg/L	1		6020A	Recoverable Total
Lithium	0.11		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Molybdenum	1.0		0.010	0.0011	mg/L	1		6020A	Recoverable Total
Selenium	0.011		0.0050	0.00089	mg/L	1		6020A	Recoverable Total
pH adj. to 25 deg C	8.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	38		3.0	1.0	mg/L	1		9056A	Total/NA
Sulfate	3000		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4100		40	19	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	2.4	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-137752-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	46		0.50	0.12	mg/L	5		6010C	Total
Barium	0.0051		0.0050	0.0022	mg/L	1		6020A	Recoverable Total
Calcium	390		1.0	0.58	mg/L	1		6020A	Recoverable Total
Lithium	0.26		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Molybdenum	0.83		0.010	0.0011	mg/L	1		6020A	Recoverable Total

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: MW-7 (Continued)

Lab Sample ID: 280-137752-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Selenium	0.0072		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	20.7	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	160		3.0	1.0	mg/L	1			9056A	Total/NA
Fluoride	0.35	J	0.50	0.17	mg/L	1			9056A	Total/NA
Sulfate	3300		100	21	mg/L	20			9056A	Total/NA
Total Dissolved Solids (TDS)	4300		100	47	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	2.0	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-137752-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Boron	1.3		0.10	0.023	mg/L	1			6010C	Total Recoverable
Barium	0.0062		0.0050	0.0022	mg/L	1			6020A	Total Recoverable
Calcium	420		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	0.00036	J	0.0010	0.00019	mg/L	1			6020A	Total Recoverable
Lithium	0.78		0.0080	0.0017	mg/L	1			6020A	Total Recoverable
Molybdenum	0.0042	J	0.010	0.0011	mg/L	1			6020A	Total Recoverable
Selenium	0.026		0.0050	0.00089	mg/L	1			6020A	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1			9040B	Total/NA
Temperature	21.0	HF	1.0	1.0	Degrees C	1			9040B	Total/NA
Chloride	190		3.0	1.0	mg/L	1			9056A	Total/NA
Fluoride	16		10	3.3	mg/L	20			9056A	Total/NA
Sulfate	7800		500	100	mg/L	100			9056A	Total/NA
Total Dissolved Solids (TDS)	10000		1000	470	mg/L	1			SM 2540C	Total/NA
Total Suspended Solids	2.8	J	4.0	1.1	mg/L	1			SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL DEN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL DEN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-137752-1	W-1	Water	06/16/20 11:40	06/17/20 15:00	
280-137752-2	W-1D	Water	06/16/20 11:40	06/17/20 15:00	
280-137752-3	W-2	Water	06/16/20 14:20	06/17/20 15:00	
280-137752-4	W-2EB	Water	06/16/20 14:40	06/17/20 15:00	
280-137752-5	W-3	Water	06/16/20 15:40	06/17/20 15:00	
280-137752-6	W-4	Water	06/16/20 13:05	06/17/20 15:00	
280-137752-7	MW-6	Water	06/17/20 08:45	06/17/20 15:00	
280-137752-8	MW-7	Water	06/17/20 09:50	06/17/20 15:00	
280-137752-9	MW-8	Water	06/16/20 17:20	06/17/20 15:00	

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.64		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:09	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.56		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:04	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	9.3		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:14	1

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:19	1

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.87		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:23	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.1		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:28	1

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	44		0.50	0.12	mg/L	—	06/23/20 14:00	06/25/20 08:32	5

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	46		0.50	0.12	mg/L	—	06/23/20 14:00	06/25/20 08:37	5

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.3		0.10	0.023	mg/L	—	06/23/20 14:00	06/24/20 21:42	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:37	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:37	1
Barium	0.0089		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:37	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:37	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:37	1
Calcium	330		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:37	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:37	1
Cobalt	0.00080	J	0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:37	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:37	1
Lithium	0.29		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:37	1
Molybdenum	0.0029	J	0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:37	1
Selenium	0.012		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:37	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:37	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:29	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:29	1
Barium	0.0078		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:29	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:29	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:29	1
Calcium	290		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:29	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:29	1
Cobalt	0.00070	J	0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:29	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:29	1
Lithium	0.25		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:29	1
Molybdenum	0.0025	J	0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:29	1
Selenium	0.010		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:29	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:29	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:39	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:39	1
Barium	0.0058		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:39	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:39	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:39	1
Calcium	350		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:39	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:39	1
Cobalt	0.0034		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:39	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:39	1
Lithium	0.62		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:39	1
Molybdenum	0.0035	J	0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:39	1
Selenium	0.0034	J	0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:39	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:39	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:42	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:42	1
Barium	ND		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:42	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:42	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:42	1
Calcium	ND		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:42	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:42	1
Cobalt	ND		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:42	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:42	1
Lithium	ND		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:42	1
Molybdenum	ND		0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:42	1
Selenium	ND		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:42	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:42	1

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:44	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:44	1
Barium	0.0079		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:44	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:44	1
Cadmium	0.00031	J	0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:44	1
Calcium	340		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:44	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:44	1
Cobalt	0.0026		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:44	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:44	1
Lithium	1.2		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:44	1
Molybdenum	0.0035	J	0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:44	1
Selenium	0.014		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:44	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:44	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:47	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:47	1
Barium	0.0077		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:47	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:47	1
Cadmium	0.00021	J	0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:47	1
Calcium	320		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:47	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:47	1
Cobalt	0.0066		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:47	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:47	1
Lithium	0.72		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:47	1
Molybdenum	0.0027	J	0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:47	1
Selenium	ND		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:47	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:47	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:49	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:49	1
Barium	0.0052		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:49	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:49	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:49	1
Calcium	380		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:49	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:49	1
Cobalt	ND		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:49	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:49	1
Lithium	0.11		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:49	1
Molybdenum	1.0		0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:49	1
Selenium	0.011		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:49	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:49	1

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:52	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:52	1
Barium	0.0051		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:52	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:52	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:52	1
Calcium	390		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:52	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:52	1
Cobalt	ND		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:52	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:52	1
Lithium	0.26		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:52	1
Molybdenum	0.83		0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:52	1
Selenium	0.0072		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:52	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:52	1

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 11:54	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 11:54	1
Barium	0.0062		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 11:54	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 11:54	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:54	1
Calcium	420		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 11:54	1
Chromium	0.0012	J	0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 11:54	1
Cobalt	0.00036	J	0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 11:54	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 11:54	1
Lithium	0.78		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 11:54	1
Molybdenum	0.0042	J	0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 11:54	1
Selenium	0.026		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 11:54	1
Thallium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 11:54	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 00:45	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 00:48	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 00:51	1

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 00:53	1

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 00:56	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 00:58	1

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 01:06	1

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 01:08	1

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L	-	06/29/20 16:00	06/30/20 01:11	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

General Chemistry

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			06/17/20 20:26	1
Temperature	21.6	HF	1.0	1.0	Degrees C			06/17/20 20:26	1
Chloride	22		3.0	1.0	mg/L			07/08/20 22:26	1
Fluoride	3.4		0.50	0.17	mg/L			07/08/20 22:26	1
Sulfate	2800		100	21	mg/L			07/08/20 22:42	20
Total Dissolved Solids (TDS)	4200		40	19	mg/L			06/18/20 09:45	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			06/17/20 20:36	1
Temperature	20.4	HF	1.0	1.0	Degrees C			06/17/20 20:36	1
Chloride	22		3.0	1.0	mg/L			07/08/20 23:31	1
Fluoride	3.3		0.50	0.17	mg/L			07/08/20 23:31	1
Sulfate	2800		100	21	mg/L			07/08/20 23:48	20
Total Dissolved Solids (TDS)	3800		40	19	mg/L			06/18/20 09:45	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/17/20 20:40	1
Temperature	20.8	HF	1.0	1.0	Degrees C			06/17/20 20:40	1
Chloride	85		3.0	1.0	mg/L			07/09/20 00:04	1
Fluoride	5.4		0.50	0.17	mg/L			07/09/20 00:04	1
Sulfate	4100		250	52	mg/L			07/09/20 22:38	50
Total Dissolved Solids (TDS)	6300		100	47	mg/L			06/18/20 09:45	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
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			06/18/20 23:10	1
Temperature	22.1	HF	1.0	1.0	Degrees C			06/18/20 23:10	1
Chloride	ND		3.0	1.0	mg/L			07/09/20 00:37	1
Fluoride	ND		0.50	0.17	mg/L			07/09/20 00:37	1
Sulfate	ND		5.0	1.0	mg/L			07/09/20 00:37	1
Total Dissolved Solids (TDS)	28		10	4.7	mg/L			06/18/20 09:45	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			06/17/20 20:54	1
Temperature	21.6	HF	1.0	1.0	Degrees C			06/17/20 20:54	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

General Chemistry (Continued)

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	200		3.0	1.0	mg/L			07/09/20 01:10	1
Fluoride	13		1.0	0.33	mg/L			07/10/20 20:38	2
Sulfate	7500		500	100	mg/L			07/09/20 23:10	100
Total Dissolved Solids (TDS)	11000		200	94	mg/L			06/18/20 09:45	1
Total Suspended Solids	6.4		4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			06/17/20 21:00	1
Temperature	21.4	HF	1.0	1.0	Degrees C			06/17/20 21:00	1
Chloride	280		60	20	mg/L			07/09/20 01:59	20
Fluoride	26		10	3.3	mg/L			07/09/20 01:59	20
Sulfate	13000		500	100	mg/L			07/09/20 23:27	100
Total Dissolved Solids (TDS)	16000		1000	470	mg/L			06/18/20 09:45	1
Total Suspended Solids	4.4		4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
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			06/17/20 21:04	1
Temperature	20.8	HF	1.0	1.0	Degrees C			06/17/20 21:04	1
Chloride	38		3.0	1.0	mg/L			07/09/20 02:48	1
Fluoride	ND		0.50	0.17	mg/L			07/09/20 02:48	1
Sulfate	3000		100	21	mg/L			07/09/20 03:05	20
Total Dissolved Solids (TDS)	4100		40	19	mg/L			06/18/20 09:45	1
Total Suspended Solids	2.4	J	4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			06/17/20 21:08	1
Temperature	20.7	HF	1.0	1.0	Degrees C			06/17/20 21:08	1
Chloride	160		3.0	1.0	mg/L			07/09/20 03:21	1
Fluoride	0.35	J	0.50	0.17	mg/L			07/09/20 03:21	1
Sulfate	3300		100	21	mg/L			07/09/20 03:38	20
Total Dissolved Solids (TDS)	4300		100	47	mg/L			06/18/20 09:45	1
Total Suspended Solids	2.0	J	4.0	1.1	mg/L			06/18/20 09:48	1

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			06/17/20 21:12	1
Temperature	21.0	HF	1.0	1.0	Degrees C			06/17/20 21:12	1
Chloride	190		3.0	1.0	mg/L			07/09/20 03:54	1
Fluoride	16		10	3.3	mg/L			07/09/20 04:10	20

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

General Chemistry (Continued)

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	7800		500	100	mg/L			07/09/20 23:43	100
Total Dissolved Solids (TDS)	10000		1000	470	mg/L			06/18/20 09:45	1
Total Suspended Solids	2.8	J	4.0	1.1	mg/L			06/18/20 09:48	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0833	U	0.0708	0.0712	1.00	0.103	pCi/L	06/23/20 09:13	07/15/20 11:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/23/20 09:13	07/15/20 11:57	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0957	U	0.0747	0.0751	1.00	0.106	pCi/L	06/23/20 09:13	07/15/20 13:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.7		40 - 110					06/23/20 09:13	07/15/20 13:48	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.180		0.104	0.105	1.00	0.140	pCi/L	06/23/20 09:13	07/15/20 13:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					06/23/20 09:13	07/15/20 13:49	1

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0460	U	0.0539	0.0540	1.00	0.0862	pCi/L	06/23/20 09:13	07/15/20 13:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					06/23/20 09:13	07/15/20 13:51	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0849	U	0.0707	0.0712	1.00	0.102	pCi/L	06/23/20 09:13	07/15/20 13:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110					06/23/20 09:13	07/15/20 13:51	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.171		0.0854	0.0868	1.00	0.0893	pCi/L	06/23/20 09:13	07/15/20 13:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.7		40 - 110					06/23/20 09:13	07/15/20 13:51	1

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.109	U	0.110	0.110	1.00	0.167	pCi/L	06/23/20 09:13	07/15/20 13:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	49.3		40 - 110					06/23/20 09:13	07/15/20 13:52	1

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0917		0.0653	0.0658	1.00	0.0836	pCi/L	06/23/20 09:13	07/15/20 13:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/23/20 09:13	07/15/20 13:52	1

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.103		0.0677	0.0683	1.00	0.0837	pCi/L	06/23/20 09:13	07/15/20 13:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					06/23/20 09:13	07/15/20 13:52	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.993		0.352	0.363	1.00	0.477	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/23/20 09:42	07/01/20 09:17	1
Y Carrier	86.0		40 - 110					06/23/20 09:42	07/01/20 09:17	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.353	U	0.298	0.300	1.00	0.475	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.7		40 - 110					06/23/20 09:42	07/01/20 09:17	1
Y Carrier	86.0		40 - 110					06/23/20 09:42	07/01/20 09:17	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.78		0.410	0.441	1.00	0.484	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					06/23/20 09:42	07/01/20 09:17	1
Y Carrier	88.6		40 - 110					06/23/20 09:42	07/01/20 09:17	1

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.218	U	0.325	0.325	1.00	0.545	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					06/23/20 09:42	07/01/20 09:17	1
Y Carrier	80.4		40 - 110					06/23/20 09:42	07/01/20 09:17	1

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.707		0.335	0.341	1.00	0.484	pCi/L	06/23/20 09:42	07/01/20 09:17	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110	06/23/20 09:42	07/01/20 09:17	1
Y Carrier	86.0		40 - 110	06/23/20 09:42	07/01/20 09:17	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.498	U	0.351	0.353	1.00	0.546	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	91.7		40 - 110	06/23/20 09:42	07/01/20 09:17	1				
Y Carrier	83.4		40 - 110	06/23/20 09:42	07/01/20 09:17	1				

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.643	U G	0.648	0.650	1.00	1.05	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	49.3		40 - 110	06/23/20 09:42	07/01/20 09:17	1				
Y Carrier	81.1		40 - 110	06/23/20 09:42	07/01/20 09:17	1				

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.348	U	0.287	0.289	1.00	0.454	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	99.7		40 - 110	06/23/20 09:42	07/01/20 09:17	1				
Y Carrier	84.9		40 - 110	06/23/20 09:42	07/01/20 09:17	1				

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.274	U	0.293	0.294	1.00	0.478	pCi/L	06/23/20 09:42	07/01/20 09:17	1
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	103		40 - 110	06/23/20 09:42	07/01/20 09:17	1				
Y Carrier	84.5		40 - 110	06/23/20 09:42	07/01/20 09:17	1				

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: W-1
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.08		0.359	0.370	5.00	0.477	pCi/L		07/17/20 07:37	1

Client Sample ID: W-1D
Date Collected: 06/16/20 11:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.449	U	0.307	0.309	5.00	0.475	pCi/L		07/17/20 07:37	1

Client Sample ID: W-2
Date Collected: 06/16/20 14:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.96		0.423	0.453	5.00	0.484	pCi/L		07/17/20 07:37	1

Client Sample ID: W-2EB
Date Collected: 06/16/20 14:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.264	U	0.329	0.329	5.00	0.545	pCi/L		07/17/20 07:37	1

Client Sample ID: W-3
Date Collected: 06/16/20 15:40
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.792		0.342	0.348	5.00	0.484	pCi/L		07/17/20 07:37	1

Client Sample ID: W-4
Date Collected: 06/16/20 13:05
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.669		0.361	0.364	5.00	0.546	pCi/L		07/17/20 07:37	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-6
Date Collected: 06/17/20 08:45
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.751	U	0.657	0.659	5.00	1.05	pCi/L		07/17/20 07:37	1

Client Sample ID: MW-7
Date Collected: 06/17/20 09:50
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.440	U	0.294	0.296	5.00	0.454	pCi/L		07/17/20 07:37	1

Client Sample ID: MW-8
Date Collected: 06/16/20 17:20
Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.378	U	0.301	0.302	5.00	0.478	pCi/L		07/17/20 07:37	1

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-439603/1-A
Matrix: Water
Analysis Batch: 440020

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 439603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.023	mg/L		06/23/20 14:00	06/24/20 19:39	1

Lab Sample ID: LCS 240-439603/2-A
Matrix: Water
Analysis Batch: 440020

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 439603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.979		mg/L		98	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-439603/1-A
Matrix: Water
Analysis Batch: 439866

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 439603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		06/23/20 14:00	06/24/20 10:45	1
Arsenic	ND		0.0050	0.00075	mg/L		06/23/20 14:00	06/24/20 10:45	1
Barium	ND		0.0050	0.0022	mg/L		06/23/20 14:00	06/24/20 10:45	1
Beryllium	ND		0.0010	0.00031	mg/L		06/23/20 14:00	06/24/20 10:45	1
Cadmium	ND		0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 10:45	1
Calcium	ND		1.0	0.58	mg/L		06/23/20 14:00	06/24/20 10:45	1
Chromium	ND		0.0020	0.00098	mg/L		06/23/20 14:00	06/24/20 10:45	1
Cobalt	ND		0.0010	0.00019	mg/L		06/23/20 14:00	06/24/20 10:45	1
Lead	ND		0.0010	0.00045	mg/L		06/23/20 14:00	06/24/20 10:45	1
Lithium	ND		0.0080	0.0017	mg/L		06/23/20 14:00	06/24/20 10:45	1
Molybdenum	ND		0.010	0.0011	mg/L		06/23/20 14:00	06/24/20 10:45	1
Selenium	ND		0.0050	0.00089	mg/L		06/23/20 14:00	06/24/20 10:45	1
Thallium	0.000266	J	0.0010	0.00020	mg/L		06/23/20 14:00	06/24/20 10:45	1

Lab Sample ID: LCS 240-439603/3-A
Matrix: Water
Analysis Batch: 439866

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 439603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.100	0.0984		mg/L		98	80 - 120
Arsenic	1.00	0.925		mg/L		92	80 - 120
Barium	1.00	0.953		mg/L		95	80 - 120
Beryllium	0.500	0.482		mg/L		96	80 - 120
Cadmium	0.500	0.474		mg/L		95	80 - 120
Calcium	25.0	23.5		mg/L		94	80 - 120
Chromium	0.500	0.494		mg/L		99	80 - 120
Cobalt	0.500	0.484		mg/L		97	80 - 120
Lead	0.500	0.478		mg/L		96	80 - 120
Lithium	0.500	0.497		mg/L		99	80 - 120
Molybdenum	0.500	0.470		mg/L		94	80 - 120
Selenium	1.00	0.898		mg/L		90	80 - 120
Thallium	1.00	0.944		mg/L		94	80 - 120

Eurofins TestAmerica, Denver

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-500409/1-A
Matrix: Water
Analysis Batch: 500637

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500409

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000027	mg/L		06/29/20 16:00	06/30/20 00:12	1

Lab Sample ID: LCS 280-500409/2-A
Matrix: Water
Analysis Batch: 500637

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500409

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00456		mg/L		91	84 - 120

Lab Sample ID: LCSD 280-500409/3-A
Matrix: Water
Analysis Batch: 500637

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 500409

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	0.00500	0.00428		mg/L		86	84 - 120	6	15

Method: 9040B - pH

Lab Sample ID: LCS 280-499301/4
Matrix: Water
Analysis Batch: 499301

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: 280-137752-1 DU
Matrix: Water
Analysis Batch: 499301

Client Sample ID: W-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH adj. to 25 deg C	7.4	HF	7.5		SU		2	5
Temperature	21.6	HF	21.0		Degrees C		3	10

Lab Sample ID: LCS 280-499383/30
Matrix: Water
Analysis Batch: 499383

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 280-501404/6
Matrix: Water
Analysis Batch: 501404

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	1.0	mg/L			07/08/20 10:39	1
Sulfate	ND		5.0	1.0	mg/L			07/08/20 10:39	1

Eurofins TestAmerica, Denver

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-501404/4

Matrix: Water

Analysis Batch: 501404

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	93.9		mg/L		94	90 - 110
Sulfate	100	94.8		mg/L		95	90 - 110

Lab Sample ID: LCSD 280-501404/5

Matrix: Water

Analysis Batch: 501404

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	93.9		mg/L		94	90 - 110	0	10
Sulfate	100	94.8		mg/L		95	90 - 110	0	10

Lab Sample ID: MRL 280-501404/3

Matrix: Water

Analysis Batch: 501404

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.86		mg/L		97	50 - 150
Sulfate	5.00	4.80	J	mg/L		96	50 - 150

Lab Sample ID: MB 280-501408/6

Matrix: Water

Analysis Batch: 501408

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	1.0	mg/L			07/08/20 10:40	1
Fluoride	ND		0.50	0.17	mg/L			07/08/20 10:40	1
Sulfate	ND		5.0	1.0	mg/L			07/08/20 10:40	1

Lab Sample ID: LCS 280-501408/4

Matrix: Water

Analysis Batch: 501408

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	94.7		mg/L		95	90 - 110
Fluoride	5.00	5.06		mg/L		101	90 - 110
Sulfate	100	95.8		mg/L		96	90 - 110

Lab Sample ID: LCSD 280-501408/5

Matrix: Water

Analysis Batch: 501408

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	94.4		mg/L		94	90 - 110	0	10
Fluoride	5.00	5.07		mg/L		101	90 - 110	0	10
Sulfate	100	95.4		mg/L		95	90 - 110	0	10

Eurofins TestAmerica, Denver

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-501408/3

Matrix: Water

Analysis Batch: 501408

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.14		mg/L		83	50 - 150
Fluoride	0.500	0.523		mg/L		105	50 - 150
Sulfate	5.00	4.48	J	mg/L		90	50 - 150

Lab Sample ID: MB 280-501799/6

Matrix: Water

Analysis Batch: 501799

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			07/10/20 13:56	1

Lab Sample ID: LCS 280-501799/4

Matrix: Water

Analysis Batch: 501799

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	5.23		mg/L		105	90 - 110

Lab Sample ID: LCSD 280-501799/5

Matrix: Water

Analysis Batch: 501799

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	5.24		mg/L		105	90 - 110	0	10

Lab Sample ID: MRL 280-501799/3

Matrix: Water

Analysis Batch: 501799

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.500	0.520		mg/L		104	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-499225/1

Matrix: Water

Analysis Batch: 499225

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			06/18/20 09:45	1

Lab Sample ID: LCS 280-499225/2

Matrix: Water

Analysis Batch: 499225

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	472		mg/L		94	93 - 110

Eurofins TestAmerica, Denver

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 280-137752-9 DU
Matrix: Water
Analysis Batch: 499225

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)	10000		10700		mg/L	-	5	10

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-499226/1
Matrix: Water
Analysis Batch: 499226

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	-		06/18/20 09:48	1

Lab Sample ID: LCS 280-499226/2
Matrix: Water
Analysis Batch: 499226

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	87.2		mg/L	-	87	79 - 114

Lab Sample ID: LCSD 280-499226/3
Matrix: Water
Analysis Batch: 499226

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	98.0		mg/L	-	98	79 - 114	12	20

Lab Sample ID: 280-137752-9 DU
Matrix: Water
Analysis Batch: 499226

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	2.8	J	2.80	J	mg/L	-	0	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-474055/21-A
Matrix: Water
Analysis Batch: 476320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 474055

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.005400	U	0.0284	0.0284	1.00	0.0683	pCi/L	06/23/20 09:13	07/15/20 18:20	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/23/20 09:13	07/15/20 18:20	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-474055/1-A

Matrix: Water

Analysis Batch: 476320

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 474055

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226		11.3	9.904		1.03	1.00	0.0879	pCi/L	87	75 - 125
	LCS	LCS								
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	91.7		40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-474060/21-A

Matrix: Water

Analysis Batch: 475062

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 474060

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3003	U	0.233	0.235	1.00	0.369	pCi/L	06/23/20 09:42	07/01/20 09:20	1
	MB	MB								
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/23/20 09:42	07/01/20 09:20	1
Y Carrier	94.2		40 - 110					06/23/20 09:42	07/01/20 09:20	1

Lab Sample ID: LCS 160-474060/1-A

Matrix: Water

Analysis Batch: 475047

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 474060

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228		10.3	11.02		1.30	1.00	0.487	pCi/L	107	75 - 125
	LCS	LCS								
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	91.7		40 - 110							
Y Carrier	69.5		40 - 110							

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Metals

Prep Batch: 439603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total Recoverable	Water	3005A	
280-137752-2	W-1D	Total Recoverable	Water	3005A	
280-137752-3	W-2	Total Recoverable	Water	3005A	
280-137752-4	W-2EB	Total Recoverable	Water	3005A	
280-137752-5	W-3	Total Recoverable	Water	3005A	
280-137752-6	W-4	Total Recoverable	Water	3005A	
280-137752-7	MW-6	Total Recoverable	Water	3005A	
280-137752-8	MW-7	Total Recoverable	Water	3005A	
280-137752-9	MW-8	Total Recoverable	Water	3005A	
MB 240-439603/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-439603/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-439603/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 439866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total Recoverable	Water	6020A	439603
280-137752-2	W-1D	Total Recoverable	Water	6020A	439603
280-137752-3	W-2	Total Recoverable	Water	6020A	439603
280-137752-4	W-2EB	Total Recoverable	Water	6020A	439603
280-137752-5	W-3	Total Recoverable	Water	6020A	439603
280-137752-6	W-4	Total Recoverable	Water	6020A	439603
280-137752-7	MW-6	Total Recoverable	Water	6020A	439603
280-137752-8	MW-7	Total Recoverable	Water	6020A	439603
280-137752-9	MW-8	Total Recoverable	Water	6020A	439603
MB 240-439603/1-A	Method Blank	Total Recoverable	Water	6020A	439603
LCS 240-439603/3-A	Lab Control Sample	Total Recoverable	Water	6020A	439603

Analysis Batch: 440020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total Recoverable	Water	6010C	439603
280-137752-2	W-1D	Total Recoverable	Water	6010C	439603
280-137752-3	W-2	Total Recoverable	Water	6010C	439603
280-137752-4	W-2EB	Total Recoverable	Water	6010C	439603
280-137752-5	W-3	Total Recoverable	Water	6010C	439603
280-137752-6	W-4	Total Recoverable	Water	6010C	439603
280-137752-7	MW-6	Total Recoverable	Water	6010C	439603
280-137752-8	MW-7	Total Recoverable	Water	6010C	439603
280-137752-9	MW-8	Total Recoverable	Water	6010C	439603
MB 240-439603/1-A	Method Blank	Total Recoverable	Water	6010C	439603
LCS 240-439603/2-A	Lab Control Sample	Total Recoverable	Water	6010C	439603

Prep Batch: 500409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	7470A	
280-137752-2	W-1D	Total/NA	Water	7470A	
280-137752-3	W-2	Total/NA	Water	7470A	
280-137752-4	W-2EB	Total/NA	Water	7470A	
280-137752-5	W-3	Total/NA	Water	7470A	
280-137752-6	W-4	Total/NA	Water	7470A	
280-137752-7	MW-6	Total/NA	Water	7470A	
280-137752-8	MW-7	Total/NA	Water	7470A	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Metals (Continued)

Prep Batch: 500409 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-9	MW-8	Total/NA	Water	7470A	
MB 280-500409/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-500409/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-500409/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 500637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	7470A	500409
280-137752-2	W-1D	Total/NA	Water	7470A	500409
280-137752-3	W-2	Total/NA	Water	7470A	500409
280-137752-4	W-2EB	Total/NA	Water	7470A	500409
280-137752-5	W-3	Total/NA	Water	7470A	500409
280-137752-6	W-4	Total/NA	Water	7470A	500409
280-137752-7	MW-6	Total/NA	Water	7470A	500409
280-137752-8	MW-7	Total/NA	Water	7470A	500409
280-137752-9	MW-8	Total/NA	Water	7470A	500409
MB 280-500409/1-A	Method Blank	Total/NA	Water	7470A	500409
LCS 280-500409/2-A	Lab Control Sample	Total/NA	Water	7470A	500409
LCSD 280-500409/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	500409

General Chemistry

Analysis Batch: 499225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	SM 2540C	
280-137752-2	W-1D	Total/NA	Water	SM 2540C	
280-137752-3	W-2	Total/NA	Water	SM 2540C	
280-137752-4	W-2EB	Total/NA	Water	SM 2540C	
280-137752-5	W-3	Total/NA	Water	SM 2540C	
280-137752-6	W-4	Total/NA	Water	SM 2540C	
280-137752-7	MW-6	Total/NA	Water	SM 2540C	
280-137752-8	MW-7	Total/NA	Water	SM 2540C	
280-137752-9	MW-8	Total/NA	Water	SM 2540C	
MB 280-499225/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-499225/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-137752-9 DU	MW-8	Total/NA	Water	SM 2540C	

Analysis Batch: 499226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	SM 2540D	
280-137752-2	W-1D	Total/NA	Water	SM 2540D	
280-137752-3	W-2	Total/NA	Water	SM 2540D	
280-137752-4	W-2EB	Total/NA	Water	SM 2540D	
280-137752-5	W-3	Total/NA	Water	SM 2540D	
280-137752-6	W-4	Total/NA	Water	SM 2540D	
280-137752-7	MW-6	Total/NA	Water	SM 2540D	
280-137752-8	MW-7	Total/NA	Water	SM 2540D	
280-137752-9	MW-8	Total/NA	Water	SM 2540D	
MB 280-499226/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-499226/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-499226/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

General Chemistry (Continued)

Analysis Batch: 499226 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-9 DU	MW-8	Total/NA	Water	SM 2540D	

Analysis Batch: 499301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	9040B	
280-137752-2	W-1D	Total/NA	Water	9040B	
280-137752-3	W-2	Total/NA	Water	9040B	
280-137752-5	W-3	Total/NA	Water	9040B	
280-137752-6	W-4	Total/NA	Water	9040B	
280-137752-7	MW-6	Total/NA	Water	9040B	
280-137752-8	MW-7	Total/NA	Water	9040B	
280-137752-9	MW-8	Total/NA	Water	9040B	
LCS 280-499301/4	Lab Control Sample	Total/NA	Water	9040B	
280-137752-1 DU	W-1	Total/NA	Water	9040B	

Analysis Batch: 499383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-4	W-2EB	Total/NA	Water	9040B	
LCS 280-499383/30	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 501404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-3	W-2	Total/NA	Water	9056A	
280-137752-5	W-3	Total/NA	Water	9056A	
280-137752-6	W-4	Total/NA	Water	9056A	
280-137752-9	MW-8	Total/NA	Water	9056A	
MB 280-501404/6	Method Blank	Total/NA	Water	9056A	
LCS 280-501404/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-501404/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-501404/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 501408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	9056A	
280-137752-1	W-1	Total/NA	Water	9056A	
280-137752-2	W-1D	Total/NA	Water	9056A	
280-137752-2	W-1D	Total/NA	Water	9056A	
280-137752-3	W-2	Total/NA	Water	9056A	
280-137752-4	W-2EB	Total/NA	Water	9056A	
280-137752-5	W-3	Total/NA	Water	9056A	
280-137752-6	W-4	Total/NA	Water	9056A	
280-137752-7	MW-6	Total/NA	Water	9056A	
280-137752-7	MW-6	Total/NA	Water	9056A	
280-137752-8	MW-7	Total/NA	Water	9056A	
280-137752-8	MW-7	Total/NA	Water	9056A	
280-137752-9	MW-8	Total/NA	Water	9056A	
280-137752-9	MW-8	Total/NA	Water	9056A	
MB 280-501408/6	Method Blank	Total/NA	Water	9056A	
LCS 280-501408/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-501408/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-501408/3	Lab Control Sample	Total/NA	Water	9056A	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

General Chemistry

Analysis Batch: 501799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-5	W-3	Total/NA	Water	9056A	
MB 280-501799/6	Method Blank	Total/NA	Water	9056A	
LCS 280-501799/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-501799/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-501799/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 474055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	PrecSep-21	
280-137752-2	W-1D	Total/NA	Water	PrecSep-21	
280-137752-3	W-2	Total/NA	Water	PrecSep-21	
280-137752-4	W-2EB	Total/NA	Water	PrecSep-21	
280-137752-5	W-3	Total/NA	Water	PrecSep-21	
280-137752-6	W-4	Total/NA	Water	PrecSep-21	
280-137752-7	MW-6	Total/NA	Water	PrecSep-21	
280-137752-8	MW-7	Total/NA	Water	PrecSep-21	
280-137752-9	MW-8	Total/NA	Water	PrecSep-21	
MB 160-474055/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-474055/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 474060

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137752-1	W-1	Total/NA	Water	PrecSep_0	
280-137752-2	W-1D	Total/NA	Water	PrecSep_0	
280-137752-3	W-2	Total/NA	Water	PrecSep_0	
280-137752-4	W-2EB	Total/NA	Water	PrecSep_0	
280-137752-5	W-3	Total/NA	Water	PrecSep_0	
280-137752-6	W-4	Total/NA	Water	PrecSep_0	
280-137752-7	MW-6	Total/NA	Water	PrecSep_0	
280-137752-8	MW-7	Total/NA	Water	PrecSep_0	
280-137752-9	MW-8	Total/NA	Water	PrecSep_0	
MB 160-474060/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-474060/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: W-1

Date Collected: 06/16/20 11:40

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-1

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:09	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:37	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 00:45	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 20:26	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/08/20 22:26	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	501408	07/08/20 22:42	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.28 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 11:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.28 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Client Sample ID: W-1D

Date Collected: 06/16/20 11:40

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-2

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:04	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:29	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 00:48	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 20:36	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/08/20 23:31	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	501408	07/08/20 23:48	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.33 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:48	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.33 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: W-2

Date Collected: 06/16/20 14:20

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-3

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:14	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:39	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 00:51	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 20:40	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/09/20 00:04	JAP	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	501404	07/09/20 22:38	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			749.94 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:49	SCB	TAL SL
Total/NA	Prep	PrecSep_0			749.94 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Client Sample ID: W-2EB

Date Collected: 06/16/20 14:40

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-4

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:19	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:42	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 00:53	AL	TAL DEN
Total/NA	Analysis	9040B		1			499383	06/18/20 23:10	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/09/20 00:37	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.16 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:51	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.16 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Eurofins TestAmerica, Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: W-3

Date Collected: 06/16/20 15:40

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-5

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:23	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:44	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 00:56	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 20:54	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/09/20 01:10	JAP	TAL DEN
Total/NA	Analysis	9056A		2	5 mL	5 mL	501799	07/10/20 20:38	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	501404	07/09/20 23:10	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.09 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:51	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.09 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Client Sample ID: W-4

Date Collected: 06/16/20 13:05

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-6

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:28	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:47	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 00:58	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 21:00	CJ	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	501408	07/09/20 01:59	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	501404	07/09/20 23:27	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	1 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.10 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:51	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.10 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Eurofins TestAmerica, Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: MW-6

Date Collected: 06/17/20 08:45

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-7

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	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		5			440020	06/25/20 08:32	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:49	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 01:06	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 21:04	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/09/20 02:48	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	501408	07/09/20 03:05	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.21 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:52	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.21 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Client Sample ID: MW-7

Date Collected: 06/17/20 09:50

Date Received: 06/17/20 15:00

Lab Sample ID: 280-137752-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		5			440020	06/25/20 08:37	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:52	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 01:08	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 21:08	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/09/20 03:21	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	501408	07/09/20 03:38	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.06 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:52	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.06 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Eurofins TestAmerica, Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Client Sample ID: MW-8

Lab Sample ID: 280-137752-9

Date Collected: 06/16/20 17:20

Matrix: Water

Date Received: 06/17/20 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1			440020	06/24/20 21:42	WKD	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	439603	06/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1			439866	06/24/20 11:54	RKT	TAL CAN
Total/NA	Prep	7470A			30 mL	50 mL	500409	06/29/20 16:00	AL	TAL DEN
Total/NA	Analysis	7470A		1			500637	06/30/20 01:11	AL	TAL DEN
Total/NA	Analysis	9040B		1			499301	06/17/20 21:12	CJ	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	501408	07/09/20 03:54	JAP	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	501408	07/09/20 04:10	JAP	TAL DEN
Total/NA	Analysis	9056A		100	5 mL	5 mL	501404	07/09/20 23:43	JAP	TAL DEN
Total/NA	Analysis	SM 2540C		1	1 mL	100 mL	499225	06/18/20 09:45	FRG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	499226	06/18/20 09:48	FRG	TAL DEN
Total/NA	Prep	PrecSep-21			750.03 mL	1.0 g	474055	06/23/20 09:13	RJD	TAL SL
Total/NA	Analysis	9315		1			476320	07/15/20 13:52	SCB	TAL SL
Total/NA	Prep	PrecSep_0			750.03 mL	1.0 g	474060	06/23/20 09:42	RJD	TAL SL
Total/NA	Analysis	9320		1			475047	07/01/20 09:17	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			476586	07/17/20 07:37	SMP	TAL SL

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

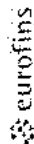
Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	State	2886	06-30-21
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-21
Illinois	NELAP	004553	11-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	07-01-21
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-21
New York	NELAP	11616	04-01-21
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-21
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-21
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

Eurofins TestAmerica, Denver

Denver #280

Chain of Custody Record

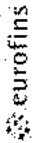
Eurofins TestAmerica, Denver
4955 Yarrow Street
Aurora, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171



Environment Testing
TestAmerica

Client Information		Sample: TARA Kent		Lab ID: Bandy, Darlene F		COC No:	
Client Contact: Molly Reeves		Phone: 720 933 7496		E-Mail: darlene.bandy@testamericainc.com		Page: 1 of 1	
Company: HDR Inc		Due Date Requested:		Analysis Requested:		Job #:	
Address: 9781 S. Meridian Blvd Suite 400		TAT Requested (days):		Barcode:		280-13752 Chain of Custody	
City: Englewood		PO #: DEN-015		Matrix: W		In Codes:	
State: CO		WO #: 28014377		Sample Type (C=Comp, G=Grab): G		In Codes: M. Heavy N. None O. As Received P. Na2SO3 R. Na2S2O3 S. H2SO4 T. TSP Directly Sample U. Acetone V. MCAA W. pH 4.5 X. EDTA Y. EDA Z. Other (specify)	
Project Name: Xcel Energy GW CCR Monitoring - Hayden		Project #: SSOWE		Sample Date: 6-16-20		Total Number of Containers: 5	
Site: Colorado		Sample Time: 1140		Sample Date: 6-16-20		Special Instructions/Note:	
Sample Identification		Sample Time		Sample Date		Special Instructions/Note:	
W-1		1140		6-16-20		Sub metals to Carbon / Road-Jam to SI	
W-1D		1140		6-16-20		Please for analyze	
W-2		1140		6-16-20		Appendix	
W-2EB		1140		6-16-20		III &	
W-3		1540		6-16-20		IV	
W-4		1305		6-16-20			
MW-6		845		6-17-20			
MW-7		950		6-17-20			
MW-8		1720		6-16-20			
Possible Hazard Identification		Polson B		Unknown		Radiological	
Non-Hazard		Flammable		Skin Irritant		Deliverable Requested: I, II, III, IV, Other (specify)	
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: TARA Kent		Date: 6-19-2020		Time: 1500		Company: HDR	
Relinquished by:		Date:		Time:		Company:	
Relinquished by:		Date:		Time:		Company:	
Custody Seal Intact:		Custody Seal No.:		Date:		Time:	
A Yes		B No		Date: 6-17-20		Time: 1500	
Company: ETAOM		Date: 6-17-20		Time: 1500		Company: ETAOM	
Company:		Date:		Time:		Company:	
Company:		Date:		Time:		Company:	

Chain of Custody Record



Environmental Testing
 Analytical

Client Information (Sub Contract Lab)		Sampler: Bandy, Daphne F		Lab ID: 280-529123.1	
Client Contact: Shipping/Receiving		Phone: E-Mail		State of Origin: Colorado	
Company: TestAmerica Laboratories, Inc.		Address: 13715 Rider Trail North,		Page: 1 of 1	
City: Earth City		State: MO, 63046		Job #: 280-137752-1	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		PO #: 		Preservation Codes:	
Email: 		WO #: 		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amphot H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Helium N - None O - AsNaO2 P - Na2SO4 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrazine U - Acetone V - MCAA W - pH 4-S X - EDTA Y - other (specify)	
Project Name: Xcel Energy GW CCR Monitoring - Hayden		Project #: 28014377		Special Instructions/Note:	
Site: Xcel Energy CCR - Hayden Station		SSOW#: 		Total Number of Containers: 1	
Due Date Requested: 7/14/2020		Analysis Requested		Special Instructions/Note:	
TAI Requested (days):		Field Filtered Sample (Yes or No)		Field Filtered Sample (Yes or No)	
PO #:		Sample Date		Sample Time	
WO #:		Sample Type (C=Comp, G=Grab)		Matrix (Viewwater, Sealed, Openwater, Residual, Acid)	
Project #:		Preservation Code		Field Filtered Sample (Yes or No)	
SSOW#:		Sample Date		Sample Time	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
W-1 (280-137752-1)		6/16/20		11:40	
W-1D (280-137752-2)		6/16/20		11:40	
W-2 (280-137752-3)		6/16/20		14:20	
W-2EB (280-137752-4)		6/16/20		14:40	
W-3 (280-137752-5)		6/16/20		15:40	
W-4 (280-137752-6)		6/16/20		13:05	
MW-6 (280-137752-7)		6/17/20		08:45	
MW-7 (280-137752-8)		6/17/20		09:50	
MW-8 (280-137752-9)		6/16/20		17:20	
Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our 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/analysis being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to valid compliance to Eurofins TestAmerica.					
Possible Hazard Identification					
Uncollected					
Deliverable Requested: I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 4					
Empty Kit Requisitioned by:					
Date:					
Requisitioned by: Califano					
Date/Time: 6/13/20					
Requisitioned by: FED EX					
Date/Time: 6/13/20					
Requisitioned by: FED EX					
Date/Time: 6/13/20					
Custody Seal No.: 0847					
Company: FED EX					
Cooler Temperature(s) °C and Other Remarks:					

Environ Biol Fish (2015) 98:105–119

100

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login #: _____	
Client: <u>ETA DM/11</u> Cooled Received on: <u>6/19/20</u> FedEx: 1 st Grd Exp <u>6/19/20</u> Receipt After-hours: Drop-off Date/Time _____	Site Name: _____ Opened on: <u>6/19/20</u> Client Drop Off: TestAmerica Courier Other: _____
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 ☒	
Cooler temperature upon receipt: _____ IR GUN# IR-10 (CF +0.7°C): Observed Cooler Temp. <u>16.4</u> °C Corrected Cooler Temp. <u>17.3</u> °C IR GUN# IR-11 (CF +0.9°C): Observed Cooler Temp. _____ Corrected Cooler Temp. _____ Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u> -Were the seals on the outside of the cooler(s) signed & dated? ☒ -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? ☒ -Were tamper/custody seals intact and uncompromised? ☒ 3. Shippers' packing slip attached to the cooler(s)? ☒ 4. Did custody papers accompany the sample(s)? ☒ 5. Were the custody papers relinquished & signed in the appropriate place? ☒ 6. Was/were the person(s) who collected the samples clearly identified on the COC? ☒ 7. Did all bottles arrive in good condition (Unbroken)? ☒ 8. Could all bottle labels be reconciled with the COC? ☒ 9. Were correct bottle(s) used for the test(s) indicated? ☒ 10. Sufficient quantity received to perform indicated analyses? ☒ 11. Are these work share samples? ☒ If Yes, Questions 12-16 have been checked at the originating laboratory. 12. Were all preserved sample(s) at the correct pH upon receipt? ☒ 13. Were VOA's on the COC? ☒ 14. Were air bubbles >6 mm in any VOA vials? ☒ Larger than this: _____ 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ 16. Was a LL Hg or Me Hg trip blank present? ☒ Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____ Concerning _____	
Tests that are not checked for pH by Receiving: VOA's Oil and Grease TOC	
PH Strip Lot# <u>HC902937</u> Yes No NA Yes No NA Yes No NA Yes No NA 1. Were all preserved sample(s) at the correct pH upon receipt? ☒ ☒ ☒ 2. Were VOA's on the COC? ☒ ☒ ☒ 3. Were air bubbles >6 mm in any VOA vials? ☒ ☒ ☒ 4. Were a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ 5. Was a LL Hg or Me Hg trip blank present? ☒ ☒ ☒	
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) _____ Time preserved: _____ Preservative(s) added/Lot number(s): _____ VOA Sample Preservation - Date/Time VOA's Frozen: _____ Sample(s) _____ were further preserved in the laboratory.	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-137752-1

Login Number: 137752

List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Lubin, Julius C

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	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 $<6\text{mm}$ (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: 280-137752-1

Login Number: 137752

List Number: 3

Creator: Mazariegos, Leonel A

List Source: Eurofins TestAmerica, St. Louis

List Creation: 06/19/20 04:30 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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	
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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-137752-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)				
Lab Sample ID	Client Sample ID	Ba (40-110)					
280-137752-1	W-1	101					
280-137752-2	W-1D	96.7					
280-137752-3	W-2	97.3					
280-137752-4	W-2EB	100					
280-137752-5	W-3	95.3					
280-137752-6	W-4	91.7					
280-137752-7	MW-6	49.3					
280-137752-8	MW-7	99.7					
280-137752-9	MW-8	103					
LCS 160-474055/1-A	Lab Control Sample	91.7					
MB 160-474055/21-A	Method Blank	101					
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)				
280-137752-1	W-1	101	86.0				
280-137752-2	W-1D	96.7	86.0				
280-137752-3	W-2	97.3	88.6				
280-137752-4	W-2EB	100	80.4				
280-137752-5	W-3	95.3	86.0				
280-137752-6	W-4	91.7	83.4				
280-137752-7	MW-6	49.3	81.1				
280-137752-8	MW-7	99.7	84.9				
280-137752-9	MW-8	103	84.5				
LCS 160-474060/1-A	Lab Control Sample	91.7	69.5				
MB 160-474060/21-A	Method Blank	101	94.2				
Tracer/Carrier Legend							
Ba = Ba Carrier							
Y = Y Carrier							

ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

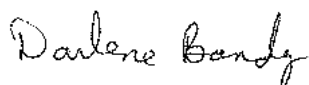
Laboratory Job ID: 280-128947-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

For:

HDR Inc
1670 Broadway, Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:
10/28/2019 6:16:01 PM

Darlene Bandy, Project Manager I
(303)736-0188
darlene.bandy@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

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
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.
α	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)

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Job ID: 280-128947-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-128947-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 9/27/2019 8:07 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 4.2° C.

TOTAL RECOVERABLE METALS (ICPMS)

Samples MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/02/2019 and analyzed on 10/03/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 10/02/2019 and analyzed on 10/03/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were analyzed on 10/21/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 10/02/2019 and analyzed on 10/24/2019.

The following samples had light yellow discoloration: W-3 (280-128947-8) and W-4 (280-128947-9).

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Job ID: 280-128947-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8), W-4 (280-128947-9), (LCS 160-444914/1-A), (LCSD 160-444914/2-A) and (MB 160-444914/19-A)

Insufficient sample volume was available to perform a sample duplicate for the following samples: MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228

Samples MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 10/02/2019 and analyzed on 10/21/2019.

The following samples had light yellow discoloration: W-3 (280-128947-8) and W-4 (280-128947-9).

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8), W-4 (280-128947-9), (LCS 160-444914/1-A), (LCSD 160-444914/2-A) and (MB 160-444914/19-A)

Insufficient sample volume was available to perform a sample duplicate for the following samples: MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW 6 (280-128947-1), MW 7 (280-128947-2), MW 8 (280-128947-3), W-1D (280-128947-4), W-3EB (280-128947-5), W-1 (280-128947-6), W-2 (280-128947-7), W-3 (280-128947-8) and W-4 (280-128947-9) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 10/28/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Client Sample ID: MW 6

Lab Sample ID: 280-128947-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0054		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00028	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Molybdenum	1.1		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.095		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Fluoride	0.46	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: MW 7

Lab Sample ID: 280-128947-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0053		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.84		0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0079		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.25		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable

Client Sample ID: MW 8

Lab Sample ID: 280-128947-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0060		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.00037	J	0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0027	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.020		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.71		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable

Client Sample ID: W-1D

Lab Sample ID: 280-128947-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0092		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.00077	J	0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Lithium	0.27		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Fluoride	0.32	J	0.50	0.17	mg/L	1		9056A	Total/NA

Client Sample ID: W-3EB

Lab Sample ID: 280-128947-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Client Sample ID: W-1

Lab Sample ID: 280-128947-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.011		0.0050	0.0022	mg/L	1		6020A	Total
Cobalt	0.00078	J	0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
Selenium	0.013		0.0050	0.00089	mg/L	1		6020A	Recoverable Total
Lithium	0.27		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Fluoride	0.32	J	0.50	0.17	mg/L	1		9056A	Recoverable Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-128947-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0062		0.0050	0.0022	mg/L	1		6020A	Total
Cobalt	0.0028		0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
Selenium	0.0026	J	0.0050	0.00089	mg/L	1		6020A	Recoverable Total
Lithium	0.58		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Fluoride	0.48	J	0.50	0.17	mg/L	1		9056A	Recoverable Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-128947-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0071		0.0050	0.0022	mg/L	1		6020A	Total
Cadmium	0.00028	J	0.0010	0.00020	mg/L	1		6020A	Recoverable Total
Cobalt	0.0019		0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0034	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
Selenium	0.012		0.0050	0.00089	mg/L	1		6020A	Recoverable Total
Lithium	1.1		0.0080	0.0017	mg/L	1		6020A	Recoverable Total
Fluoride	0.40	J	0.50	0.17	mg/L	1		9056A	Recoverable Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-128947-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0086		0.0050	0.0022	mg/L	1		6020A	Total
Cadmium	0.00024	J	0.0010	0.00020	mg/L	1		6020A	Recoverable Total
Cobalt	0.0079		0.0010	0.00019	mg/L	1		6020A	Recoverable Total
Molybdenum	0.0030	J	0.010	0.0011	mg/L	1		6020A	Recoverable Total
Lithium	0.71		0.0080	0.0017	mg/L	1		6020A	Recoverable Total

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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 = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-128947-1	MW 6	Water	09/26/19 09:30	09/27/19 08:07	
280-128947-2	MW 7	Water	09/26/19 08:35	09/27/19 08:07	
280-128947-3	MW 8	Water	09/26/19 10:35	09/27/19 08:07	
280-128947-4	W-1D	Water	09/25/19 13:20	09/27/19 08:07	
280-128947-5	W-3EB	Water	09/25/19 16:20	09/27/19 08:07	
280-128947-6	W-1	Water	09/25/19 13:20	09/27/19 08:07	
280-128947-7	W-2	Water	09/25/19 15:10	09/27/19 08:07	
280-128947-8	W-3	Water	09/25/19 16:05	09/27/19 08:07	
280-128947-9	W-4	Water	09/25/19 14:20	09/27/19 08:07	

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:25	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:25	1
Barium	0.0054		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:25	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:25	1
Cadmium	0.00028	J	0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:25	1
Cobalt	ND		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:25	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:25	1
Molybdenum	1.1		0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:25	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:25	1
Selenium	0.012		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:25	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:25	1
Lithium	0.095		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:25	1

Client Sample ID: MW 7
Date Collected: 09/26/19 08:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:28	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:28	1
Barium	0.0053		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:28	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:28	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:28	1
Cobalt	ND		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:28	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:28	1
Molybdenum	0.84		0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:28	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:28	1
Selenium	0.0079		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:28	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:28	1
Lithium	0.25		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:28	1

Client Sample ID: MW 8
Date Collected: 09/26/19 10:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:30	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:30	1
Barium	0.0060		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:30	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:30	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:30	1
Cobalt	0.00037	J	0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:30	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:30	1
Molybdenum	0.0027	J	0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:30	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:30	1
Selenium	0.020		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:30	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:30	1
Lithium	0.71		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:30	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-1D
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:32	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:32	1
Barium	0.0092		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:32	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:32	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:32	1
Cobalt	0.00077	J	0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:32	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:32	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:32	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:32	1
Selenium	0.012		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:32	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:32	1
Lithium	0.27		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:32	1

Client Sample ID: W-3EB
Date Collected: 09/25/19 16:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:35	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:35	1
Barium	ND		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:35	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:35	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:35	1
Cobalt	ND		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:35	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:35	1
Molybdenum	ND		0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:35	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:35	1
Selenium	ND		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:35	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:35	1
Lithium	ND		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:35	1

Client Sample ID: W-1
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:37	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:37	1
Barium	0.011		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:37	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:37	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:37	1
Cobalt	0.00078	J	0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:37	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:37	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:37	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:37	1
Selenium	0.013		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:37	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:37	1
Lithium	0.27		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:37	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-2
Date Collected: 09/25/19 15:10
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:40	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:40	1
Barium	0.0062		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:40	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:40	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:40	1
Cobalt	0.0028		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:40	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:40	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:40	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:40	1
Selenium	0.0026	J	0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:40	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:40	1
Lithium	0.58		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:40	1

Client Sample ID: W-3
Date Collected: 09/25/19 16:05
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:42	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:42	1
Barium	0.0071		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:42	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:42	1
Cadmium	0.00028	J	0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:42	1
Cobalt	0.0019		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:42	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:42	1
Molybdenum	0.0034	J	0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:42	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:42	1
Selenium	0.012		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:42	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:42	1
Lithium	1.1		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:42	1

Client Sample ID: W-4
Date Collected: 09/25/19 14:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 15:49	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 15:49	1
Barium	0.0086		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 15:49	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 15:49	1
Cadmium	0.00024	J	0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:49	1
Cobalt	0.0079		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 15:49	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 15:49	1
Molybdenum	0.0030	J	0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 15:49	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 15:49	1
Selenium	ND		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 15:49	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 15:49	1
Lithium	0.71		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 15:49	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:06	1

Client Sample ID: MW 7
Date Collected: 09/26/19 08:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:08	1

Client Sample ID: MW 8
Date Collected: 09/26/19 10:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:14	1

Client Sample ID: W-1D
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:17	1

Client Sample ID: W-3EB
Date Collected: 09/25/19 16:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:19	1

Client Sample ID: W-1
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:21	1

Client Sample ID: W-2
Date Collected: 09/25/19 15:10
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:23	1

Client Sample ID: W-3
Date Collected: 09/25/19 16:05
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:25	1

Client Sample ID: W-4
Date Collected: 09/25/19 14:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L	—	10/02/19 14:00	10/03/19 15:27	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

General Chemistry

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.46	J	0.50	0.17	mg/L	-		10/21/19 20:37	1

Client Sample ID: MW 7
Date Collected: 09/26/19 08:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L	-		10/21/19 20:53	1

Client Sample ID: MW 8
Date Collected: 09/26/19 10:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L	-		10/21/19 21:10	1

Client Sample ID: W-1D
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.32	J	0.50	0.17	mg/L	-		10/21/19 21:26	1

Client Sample ID: W-3EB
Date Collected: 09/25/19 16:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L	-		10/21/19 21:43	1

Client Sample ID: W-1
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.32	J	0.50	0.17	mg/L	-		10/21/19 21:59	1

Client Sample ID: W-2
Date Collected: 09/25/19 15:10
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.48	J	0.50	0.17	mg/L	-		10/21/19 22:48	1

Client Sample ID: W-3
Date Collected: 09/25/19 16:05
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.40	J	0.50	0.17	mg/L	-		10/21/19 23:05	1

Client Sample ID: W-4
Date Collected: 09/25/19 14:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L	-		10/21/19 23:21	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.186	U	0.137	0.138	1.00	0.200	pCi/L	10/02/19 18:18	10/24/19 05:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.9		40 - 110					10/02/19 18:18	10/24/19 05:36	1

Client Sample ID: MW 7
Date Collected: 09/26/19 08:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.162	U	0.126	0.127	1.00	0.188	pCi/L	10/02/19 18:18	10/24/19 05:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					10/02/19 18:18	10/24/19 05:37	1

Client Sample ID: MW 8
Date Collected: 09/26/19 10:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.166	U	0.131	0.132	1.00	0.194	pCi/L	10/02/19 18:18	10/24/19 05:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.4		40 - 110					10/02/19 18:18	10/24/19 05:37	1

Client Sample ID: W-1D
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.189	U	0.132	0.133	1.00	0.190	pCi/L	10/02/19 18:18	10/24/19 12:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					10/02/19 18:18	10/24/19 12:57	1

Client Sample ID: W-3EB
Date Collected: 09/25/19 16:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.131	U	0.140	0.141	1.00	0.226	pCi/L	10/02/19 18:18	10/24/19 12:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.1		40 - 110					10/02/19 18:18	10/24/19 12:57	1

Eurofins TestAmerica, Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.248		0.140	0.142	1.00	0.187	pCi/L	10/02/19 18:18	10/24/19 12:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.8		40 - 110					10/02/19 18:18	10/24/19 12:57	1

Client Sample ID: W-2
Date Collected: 09/25/19 15:10
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.195	U	0.137	0.138	1.00	0.201	pCi/L	10/02/19 18:18	10/24/19 12:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.4		40 - 110					10/02/19 18:18	10/24/19 12:57	1

Client Sample ID: W-3
Date Collected: 09/25/19 16:05
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.207	U	0.150	0.151	1.00	0.221	pCi/L	10/02/19 18:18	10/24/19 12:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.0		40 - 110					10/02/19 18:18	10/24/19 12:57	1

Client Sample ID: W-4
Date Collected: 09/25/19 14:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.304		0.156	0.158	1.00	0.204	pCi/L	10/02/19 18:18	10/24/19 12:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.1		40 - 110					10/02/19 18:18	10/24/19 12:57	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.443		0.278	0.281	1.00	0.429	pCi/L	10/02/19 19:06	10/21/19 09:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.9		40 - 110					10/02/19 19:06	10/21/19 09:38	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9320 - Radium-228 (GFPC) (Continued)

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Carrier	%Yield	Qualifier	Limits
Y Carrier	82.6		40 - 110

Prepared	Analyzed	Dil Fac
10/02/19 19:06	10/21/19 09:38	1

Client Sample ID: MW 7
Date Collected: 09/26/19 08:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.213	U	0.231	0.231	1.00	0.378	pCi/L	10/02/19 19:06	10/21/19 09:38	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	102		40 - 110							
Y Carrier	81.9		40 - 110							
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	102		40 - 110							
Y Carrier	81.9		40 - 110							

Client Sample ID: MW 8
Date Collected: 09/26/19 10:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.594		0.290	0.295	1.00	0.423	pCi/L	10/02/19 19:06	10/21/19 09:38	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	86.4		40 - 110							
Y Carrier	83.0		40 - 110							
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	86.4		40 - 110							
Y Carrier	83.0		40 - 110							

Client Sample ID: W-1D
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.478		0.269	0.273	1.00	0.403	pCi/L	10/02/19 19:06	10/21/19 09:38	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	88.1		40 - 110							
Y Carrier	84.1		40 - 110							
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	88.1		40 - 110							
Y Carrier	84.1		40 - 110							

Client Sample ID: W-3EB
Date Collected: 09/25/19 16:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.158	U	0.280	0.281	1.00	0.475	pCi/L	10/02/19 19:06	10/21/19 09:38	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	83.1		40 - 110							
Y Carrier	84.1		40 - 110							
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	83.1		40 - 110							
Y Carrier	84.1		40 - 110							

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.408	U	0.291	0.293	1.00	0.455	pCi/L	10/02/19 19:06	10/21/19 09:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.8		40 - 110					10/02/19 19:06	10/21/19 09:38	1
Y Carrier	79.6		40 - 110					10/02/19 19:06	10/21/19 09:38	1

Client Sample ID: W-2
Date Collected: 09/25/19 15:10
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.615		0.285	0.290	1.00	0.415	pCi/L	10/02/19 19:06	10/21/19 09:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.4		40 - 110					10/02/19 19:06	10/21/19 09:39	1
Y Carrier	84.1		40 - 110					10/02/19 19:06	10/21/19 09:39	1

Client Sample ID: W-3
Date Collected: 09/25/19 16:05
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.708		0.287	0.294	1.00	0.400	pCi/L	10/02/19 19:06	10/21/19 09:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.0		40 - 110					10/02/19 19:06	10/21/19 09:39	1
Y Carrier	82.6		40 - 110					10/02/19 19:06	10/21/19 09:39	1

Client Sample ID: W-4
Date Collected: 09/25/19 14:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.667		0.293	0.299	1.00	0.420	pCi/L	10/02/19 19:06	10/21/19 09:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.1		40 - 110					10/02/19 19:06	10/21/19 09:39	1
Y Carrier	83.0		40 - 110					10/02/19 19:06	10/21/19 09:39	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW 6
Date Collected: 09/26/19 09:30
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.629		0.310	0.313	5.00	0.429	pCi/L		10/28/19 10:04	1

Client Sample ID: MW 7
Date Collected: 09/26/19 08:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.375	U	0.263	0.264	5.00	0.378	pCi/L		10/28/19 10:04	1

Client Sample ID: MW 8
Date Collected: 09/26/19 10:35
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.760		0.318	0.323	5.00	0.423	pCi/L		10/28/19 10:04	1

Client Sample ID: W-1D
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.666		0.300	0.304	5.00	0.403	pCi/L		10/28/19 10:04	1

Client Sample ID: W-3EB
Date Collected: 09/25/19 16:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.289	U	0.313	0.314	5.00	0.475	pCi/L		10/28/19 10:04	1

Client Sample ID: W-1
Date Collected: 09/25/19 13:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.656		0.323	0.326	5.00	0.455	pCi/L		10/28/19 10:04	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: W-2
Date Collected: 09/25/19 15:10
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.810		0.316	0.321	5.00	0.415	pCi/L		10/28/19 10:04	1

Client Sample ID: W-3
Date Collected: 09/25/19 16:05
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.915		0.324	0.331	5.00	0.400	pCi/L		10/28/19 10:04	1

Client Sample ID: W-4
Date Collected: 09/25/19 14:20
Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.971		0.332	0.338	5.00	0.420	pCi/L		10/28/19 10:04	1

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-403639/1-A
Matrix: Water
Analysis Batch: 404069

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 403639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00057	mg/L		10/02/19 14:00	10/03/19 14:37	1
Arsenic	ND		0.0050	0.00075	mg/L		10/02/19 14:00	10/03/19 14:37	1
Barium	ND		0.0050	0.0022	mg/L		10/02/19 14:00	10/03/19 14:37	1
Beryllium	ND		0.0010	0.00031	mg/L		10/02/19 14:00	10/03/19 14:37	1
Cadmium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 14:37	1
Cobalt	ND		0.0010	0.00019	mg/L		10/02/19 14:00	10/03/19 14:37	1
Chromium	ND		0.0020	0.00098	mg/L		10/02/19 14:00	10/03/19 14:37	1
Molybdenum	ND		0.010	0.0011	mg/L		10/02/19 14:00	10/03/19 14:37	1
Lead	ND		0.0010	0.00045	mg/L		10/02/19 14:00	10/03/19 14:37	1
Selenium	ND		0.0050	0.00089	mg/L		10/02/19 14:00	10/03/19 14:37	1
Thallium	ND		0.0010	0.00020	mg/L		10/02/19 14:00	10/03/19 14:37	1
Lithium	ND		0.0080	0.0017	mg/L		10/02/19 14:00	10/03/19 14:37	1

Lab Sample ID: LCS 240-403639/3-A
Matrix: Water
Analysis Batch: 404069

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 403639

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	0.967		mg/L		97	80 - 120
Barium	1.00	0.991		mg/L		99	80 - 120
Beryllium	0.500	0.505		mg/L		101	80 - 120
Cadmium	0.500	0.478		mg/L		96	80 - 120
Cobalt	0.500	0.487		mg/L		97	80 - 120
Chromium	0.500	0.506		mg/L		101	80 - 120
Molybdenum	0.500	0.486		mg/L		97	80 - 120
Lead	0.500	0.486		mg/L		97	80 - 120
Selenium	1.00	0.924		mg/L		92	80 - 120
Thallium	1.00	0.945		mg/L		94	80 - 120
Lithium	0.500	0.488		mg/L		98	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-403653/1-A
Matrix: Water
Analysis Batch: 403957

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 403653

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		10/02/19 14:00	10/03/19 14:31	1

Lab Sample ID: LCS 240-403653/2-A
Matrix: Water
Analysis Batch: 403957

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 403653

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.78		ug/L		96	80 - 120

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-474760/6

Matrix: Water

Analysis Batch: 474760

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.17	mg/L			10/21/19 12:38	1

Lab Sample ID: LCS 280-474760/4

Matrix: Water

Analysis Batch: 474760

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	5.00	5.01		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-474760/5

Matrix: Water

Analysis Batch: 474760

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	5.16		mg/L		103	90 - 110	3	10

Lab Sample ID: MRL 280-474760/3

Matrix: Water

Analysis Batch: 474760

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.500	0.535		mg/L		107	50 - 150

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-444912/19-A

Matrix: Water

Analysis Batch: 447519

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 444912

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1221	U	0.135	0.136	1.00	0.220	pCi/L	10/02/19 18:18	10/24/19 12:58	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110	10/02/19 18:18	10/24/19 12:58	1

Lab Sample ID: LCS 160-444912/1-A

Matrix: Water

Analysis Batch: 447519

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 444912

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.85		1.25	1.00	0.266	pCi/L	96	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	74.3		40 - 110

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-444912/2-A

Matrix: Water

Analysis Batch: 447519

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 444912

Analyte		Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226		11.4	10.87		1.25	1.00	0.233	pCi/L	96	75 - 125	0.01	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits									
Ba Carrier	80.5		40 - 110									

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-444914/19-A

Matrix: Water

Analysis Batch: 447095

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 444914

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.04348	U	0.316	0.316	1.00	0.550	pCi/L	10/02/19 19:06	10/21/19 09:42	1
Carrier	MB %Yield	MB Qualifier	Limits							
Ba Carrier	88.1		40 - 110							
Y Carrier	81.9		40 - 110							
								Prepared	Analyzed	Dil Fac
								10/02/19 19:06	10/21/19 09:42	1
								10/02/19 19:06	10/21/19 09:42	1

Lab Sample ID: LCS 160-444914/1-A

Matrix: Water

Analysis Batch: 447097

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 444914

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228		9.47	11.57		1.36	1.00	0.546	pCi/L	122	75 - 125		
Carrier	LCS %Yield	LCS Qualifier	Limits									
Ba Carrier	74.3		40 - 110									
Y Carrier	83.4		40 - 110									

Lab Sample ID: LCSD 160-444914/2-A

Matrix: Water

Analysis Batch: 447097

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 444914

Analyte		Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228		9.47	10.30		1.23	1.00	0.506	pCi/L	109	75 - 125	0.49	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits									
Ba Carrier	80.5		40 - 110									
Y Carrier	81.1		40 - 110									

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Metals

Prep Batch: 403639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total Recoverable	Water	3005A	
280-128947-2	MW 7	Total Recoverable	Water	3005A	
280-128947-3	MW 8	Total Recoverable	Water	3005A	
280-128947-4	W-1D	Total Recoverable	Water	3005A	
280-128947-5	W-3EB	Total Recoverable	Water	3005A	
280-128947-6	W-1	Total Recoverable	Water	3005A	
280-128947-7	W-2	Total Recoverable	Water	3005A	
280-128947-8	W-3	Total Recoverable	Water	3005A	
280-128947-9	W-4	Total Recoverable	Water	3005A	
MB 240-403639/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-403639/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 403653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total/NA	Water	7470A	
280-128947-2	MW 7	Total/NA	Water	7470A	
280-128947-3	MW 8	Total/NA	Water	7470A	
280-128947-4	W-1D	Total/NA	Water	7470A	
280-128947-5	W-3EB	Total/NA	Water	7470A	
280-128947-6	W-1	Total/NA	Water	7470A	
280-128947-7	W-2	Total/NA	Water	7470A	
280-128947-8	W-3	Total/NA	Water	7470A	
280-128947-9	W-4	Total/NA	Water	7470A	
MB 240-403653/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-403653/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 403957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total/NA	Water	7470A	403653
280-128947-2	MW 7	Total/NA	Water	7470A	403653
280-128947-3	MW 8	Total/NA	Water	7470A	403653
280-128947-4	W-1D	Total/NA	Water	7470A	403653
280-128947-5	W-3EB	Total/NA	Water	7470A	403653
280-128947-6	W-1	Total/NA	Water	7470A	403653
280-128947-7	W-2	Total/NA	Water	7470A	403653
280-128947-8	W-3	Total/NA	Water	7470A	403653
280-128947-9	W-4	Total/NA	Water	7470A	403653
MB 240-403653/1-A	Method Blank	Total/NA	Water	7470A	403653
LCS 240-403653/2-A	Lab Control Sample	Total/NA	Water	7470A	403653

Analysis Batch: 404069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total Recoverable	Water	6020A	403639
280-128947-2	MW 7	Total Recoverable	Water	6020A	403639
280-128947-3	MW 8	Total Recoverable	Water	6020A	403639
280-128947-4	W-1D	Total Recoverable	Water	6020A	403639
280-128947-5	W-3EB	Total Recoverable	Water	6020A	403639
280-128947-6	W-1	Total Recoverable	Water	6020A	403639
280-128947-7	W-2	Total Recoverable	Water	6020A	403639
280-128947-8	W-3	Total Recoverable	Water	6020A	403639
280-128947-9	W-4	Total Recoverable	Water	6020A	403639

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Metals (Continued)

Analysis Batch: 404069 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-403639/1-A	Method Blank	Total Recoverable	Water	6020A	403639
LCS 240-403639/3-A	Lab Control Sample	Total Recoverable	Water	6020A	403639

General Chemistry

Analysis Batch: 474760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total/NA	Water	9056A	
280-128947-2	MW 7	Total/NA	Water	9056A	
280-128947-3	MW 8	Total/NA	Water	9056A	
280-128947-4	W-1D	Total/NA	Water	9056A	
280-128947-5	W-3EB	Total/NA	Water	9056A	
280-128947-6	W-1	Total/NA	Water	9056A	
280-128947-7	W-2	Total/NA	Water	9056A	
280-128947-8	W-3	Total/NA	Water	9056A	
280-128947-9	W-4	Total/NA	Water	9056A	
MB 280-474760/6	Method Blank	Total/NA	Water	9056A	
LCS 280-474760/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-474760/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-474760/3	Lab Control Sample	Total/NA	Water	9056A	

Rad

Prep Batch: 444912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total/NA	Water	PrecSep-21	
280-128947-2	MW 7	Total/NA	Water	PrecSep-21	
280-128947-3	MW 8	Total/NA	Water	PrecSep-21	
280-128947-4	W-1D	Total/NA	Water	PrecSep-21	
280-128947-5	W-3EB	Total/NA	Water	PrecSep-21	
280-128947-6	W-1	Total/NA	Water	PrecSep-21	
280-128947-7	W-2	Total/NA	Water	PrecSep-21	
280-128947-8	W-3	Total/NA	Water	PrecSep-21	
280-128947-9	W-4	Total/NA	Water	PrecSep-21	
MB 160-444912/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-444912/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-444912/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 444914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-128947-1	MW 6	Total/NA	Water	PrecSep_0	
280-128947-2	MW 7	Total/NA	Water	PrecSep_0	
280-128947-3	MW 8	Total/NA	Water	PrecSep_0	
280-128947-4	W-1D	Total/NA	Water	PrecSep_0	
280-128947-5	W-3EB	Total/NA	Water	PrecSep_0	
280-128947-6	W-1	Total/NA	Water	PrecSep_0	
280-128947-7	W-2	Total/NA	Water	PrecSep_0	
280-128947-8	W-3	Total/NA	Water	PrecSep_0	
280-128947-9	W-4	Total/NA	Water	PrecSep_0	
MB 160-444914/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-444914/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-444914/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Client Sample ID: MW 6

Date Collected: 09/26/19 09:30

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-1

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:25	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:06	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 20:37	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.63 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 05:36	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.63 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:38	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Client Sample ID: MW 7

Date Collected: 09/26/19 08:35

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-2

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:28	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:08	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 20:53	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.56 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447518	10/24/19 05:37	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.56 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:38	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Client Sample ID: MW 8

Date Collected: 09/26/19 10:35

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-3

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:30	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:14	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 21:10	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447518	10/24/19 05:37	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:38	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Client Sample ID: W-1D

Date Collected: 09/25/19 13:20

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-4

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:32	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:17	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 21:26	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.72 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 12:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.72 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:38	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Client Sample ID: W-3EB

Date Collected: 09/25/19 16:20

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-5

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:35	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:19	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 21:43	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 12:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:38	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Client Sample ID: W-1

Date Collected: 09/25/19 13:20

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-6

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:37	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:21	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 21:59	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.16 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 12:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.16 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:38	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Client Sample ID: W-2

Date Collected: 09/25/19 15:10

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-7

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	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:40	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:23	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 22:48	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.75 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 12:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.75 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:39	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Client Sample ID: W-3

Date Collected: 09/25/19 16:05

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:42	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:25	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 23:05	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 12:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:39	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Client Sample ID: W-4

Date Collected: 09/25/19 14:20

Date Received: 09/27/19 08:07

Lab Sample ID: 280-128947-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	403639	10/02/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020A		1			404069	10/03/19 15:49	RKT	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	403653	10/02/19 14:00	SLD	TAL CAN
Total/NA	Analysis	7470A		1			403957	10/03/19 15:27	DTN	TAL CAN
Total/NA	Analysis	9056A		1	5 mL	5 mL	474760	10/21/19 23:21	JAP	TAL DEN
Total/NA	Prep	PrecSep-21			1000.35 mL	1.0 g	444912	10/02/19 18:18	ORM	TAL SL
Total/NA	Analysis	9315		1			447519	10/24/19 12:57	SCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.35 mL	1.0 g	444914	10/02/19 19:06	ORM	TAL SL
Total/NA	Analysis	9320		1			447097	10/21/19 09:39	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			448003	10/28/19 10:04	SMP	TAL SL

Eurofins TestAmerica, Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-19
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
9056A		Water	Fluoride

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19 *
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
Washington	State Program	C592	08-30-20
West Virginia DEP	State	381	10-31-19
West Virginia DEP	State Program	381	10-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver

Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

OWENS

[illegible]

Client Information						Analysis Requested						Sample Disposal / Special Instructions					
Sampler: Tava Kent Phone: 720-933-7496 E-Mail: stephanie.rollmeyer@stetamerica.com						Lab PM: Rollmeyer, Stephanie K E-Mail: stephanie.rollmeyer@stetamerica.com						Coiner Tracking No(s): Page: _____ of _____ Job #: _____					
Address: 8781 S. Meridian Blvd Suite 400 City: Englewood State, Zip: CO, 80112 Phone: 720-633-2388(Tel) E-Mail: anna.lundin@hdinc.com						Due Date Requested: TAT Requested (days): Standard PO #: DEN-001 WO #: Project #: 28014377 SSOW#:						Preservation Codes: ☐ M-Hexane ☐ A-HCl ☐ None ☒ AsNaO2 ☐ Na2O4S ☐ Na2SO3 ☐ Na2S2O3 ☐ H2SO4 ☐ RSP Dodecylhydric ☐ Acetone ☐ MCAA ☐ pH 4-5 ☐ L-oilher (specify)					
Sample Identification MW 5 TV MW 6 MW 7 MW 8 Field Driftless TV W-ID Equipment Blank TV W-3EB W-1 W-2 W-3 W-4						Field Filtrate Sample (Yes or No) ☒ Yes ☐ No						Perform MS/MSD (Yes or No) ☒ Yes ☐ No					
Sample Date 9/26/19 9/26/19 9/26/19 9/26/19 9/26/19 9/26/19 9/26/19 9/26/19 9/26/19						Sample Time 930 835 1035 1320 1620 1320 1510 1605 1420						Matrix Water Water Water Water Water Water Water Water Water					
Sample Type C=Comp, G=Grab						Preservation Code ☒ N ☐ Z						Total Number of Containers 25400-1581-24228-9320 25400-1581-24228-9315 25400-1581-24228-9315 25400-1581-24228-9315 25400-1581-24228-9315 25400-1581-24228-9315 25400-1581-24228-9315 25400-1581-24228-9315 25400-1581-24228-9315					
Special Instructions/Note: APIN V V																	
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						Special Instructions/QC Requirements:					
Relinquished by: Tava Kent Date/Time: 7/25/2019 807						Relinquished by: HDR Date/Time: 7/25/2019 807						Relinquished by: HDR Date/Time: 7/25/2019 807					
Relinquished by: Tava Kent Date/Time: 7/25/2019 807						Relinquished by: HDR Date/Time: 7/25/2019 807						Relinquished by: HDR Date/Time: 7/25/2019 807					
Relinquished by: Tava Kent Date/Time: 7/25/2019 807						Relinquished by: HDR Date/Time: 7/25/2019 807						Relinquished by: HDR Date/Time: 7/25/2019 807					
Custody Seal No.: 2-3421001240187-23-19						Custody Seal No.: 2-3421001240187-23-19						Custody Seal No.: 2-3421001240187-23-19					

Chain of Custody Record



eurofins

Environmental Testing
 Engineering

Client Information (Sub Contract Lab)		Lab Pk: Bandy, Darlene F		Center Tracking Refs): 280-500265.1	
Client Contact: Shipping/Receiving		Phone: darlene.bandy@testamericainc.com		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		State of Origin: Colorado		Job #: 280-128947-1	
Address: 13715 Rider Trail North, Earth City, MO 63045		Accreditations Requested (See note): DOD ELAP - A2LA		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHCO3 F - MeOH G - Isopropanol H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 314-298-6366(Tel) 314-298-8757(Fax)		Due Date Requested: 10/23/2019		Analysis Requested	
Email: [Redacted]		TAI Requested (days):		Total Number of Containers	
Project Name: Xcel Energy GW CCR Monitoring - Hayden		PO #:		Field Filtered Sample (Yes or No)	
Site: Xcel Energy CCR - Hayden Station		WO #:		Matrix (Water, Spill, Overhead)	
Project #: 28014377		Sample Date		Sample Type (C-Comp, G-Grab)	
Site #: SSOM4		Sample Time		Preservation Code	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
MW 6 (280-128947-1)	9/26/19	09:30	Mountain	X	X
MW 7 (280-128947-2)	9/26/19	08:35	Mountain	X	X
MW 8 (280-128947-3)	9/26/19	13:35	Mountain	X	X
W-1D (280-128947-4)	9/25/19	13:20	Mountain	X	X
W-3EB (280-128947-5)	9/25/19	16:20	Mountain	X	X
W-1 (280-128947-6)	9/25/19	13:20	Mountain	X	X
W-2 (280-128947-7)	9/25/19	15:10	Mountain	X	X
W-3 (280-128947-8)	9/25/19	16:05	Mountain	X	X
W-4 (280-128947-8)	9/25/19	14:20	Mountain	X	X

Note: Since laboratory accreditation is subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our 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/test method 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 Sticking to send compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 4

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/OC Requirements:

Empty Kit Relinquished by: _____ Date: _____
Relinquished by: _____ Date/Time: 9/26/19 1510
Relinquished by: _____ Date/Time: _____
Relinquished by: _____ Date/Time: _____

Custody Seal No.: _____
 Custody Seal Intact: ☒ Yes ☐ No
 Cooler Temperature(s) °C and Other Remarks:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login # : _____

Canton Facility

Client TA Denver Site Name _____

Cooler unpacked by: _____

Cooler Received on 10-1-19 Opened on 10-1-19FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other Late Freight

Receipt After-hours: Drop-off Date/Time _____

Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____Packing material used: Bubble Wrap Foam Plastic Bag None Other _____COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt _____

☐ See Multiple Cooler FormIR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 21.9 °C Corrected Cooler Temp. 21.9 °C

IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA-Were tamper/custody seals intact and uncompromised? Yes No NA3. Shippers' packing slip attached to the cooler(s)? Yes No4. Did custody papers accompany the sample(s)? Yes No ASG5. Were the custody papers relinquished & signed in the appropriate place? Yes No 10-1-196. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No7. Did all bottles arrive in good condition (Unbroken)? Yes No8. Could all bottle labels be reconciled with the COC? Yes No9. Were correct bottle(s) used for the test(s) indicated? Yes No10. Sufficient quantity received to perform indicated analyses? Yes No11. Are these work share samples? Yes No

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA13. Were VOAs on the COC? Yes No14. Were air bubbles >6 mm in any VOA vials? Yes No NA15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No16. Was a LL Hg or Me Hg trip blank present? Yes NoTests that are not
checked for pH by
Receiving:VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

W1-NC-099

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-128947-1

Login Number: 128947

List Source: Eurofins TestAmerica, Denver

List Number: 1

Creator: Petunin, Peter

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	False	Not present - client drop off
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-128947-1

Login Number: 128947

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 10/01/19 02:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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	22.0
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 $<6\text{mm}$ ($1/4''$).	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-128947-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)		
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
280-128947-1	MW 6	94.9
280-128947-2	MW 7	102
280-128947-3	MW 8	86.4
280-128947-4	W-1D	88.1
280-128947-5	W-3EB	83.1
280-128947-6	W-1	89.8
280-128947-7	W-2	92.4
280-128947-8	W-3	89.0
280-128947-9	W-4	90.1
LCS 160-444912/1-A	Lab Control Sample	74.3
LCSD 160-444912/2-A	Lab Control Sample Dup	80.5
MB 160-444912/19-A	Method Blank	88.1
Tracer/Carrier Legend		
Ba Carrier = Ba Carrier		

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)			
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
280-128947-1	MW 6	94.9	82.6
280-128947-2	MW 7	102	81.9
280-128947-3	MW 8	86.4	83.0
280-128947-4	W-1D	88.1	84.1
280-128947-5	W-3EB	83.1	84.1
280-128947-6	W-1	89.8	79.6
280-128947-7	W-2	92.4	84.1
280-128947-8	W-3	89.0	82.6
280-128947-9	W-4	90.1	83.0
LCS 160-444914/1-A	Lab Control Sample	74.3	83.4
LCSD 160-444914/2-A	Lab Control Sample Dup	80.5	81.1
MB 160-444914/19-A	Method Blank	88.1	81.9
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			