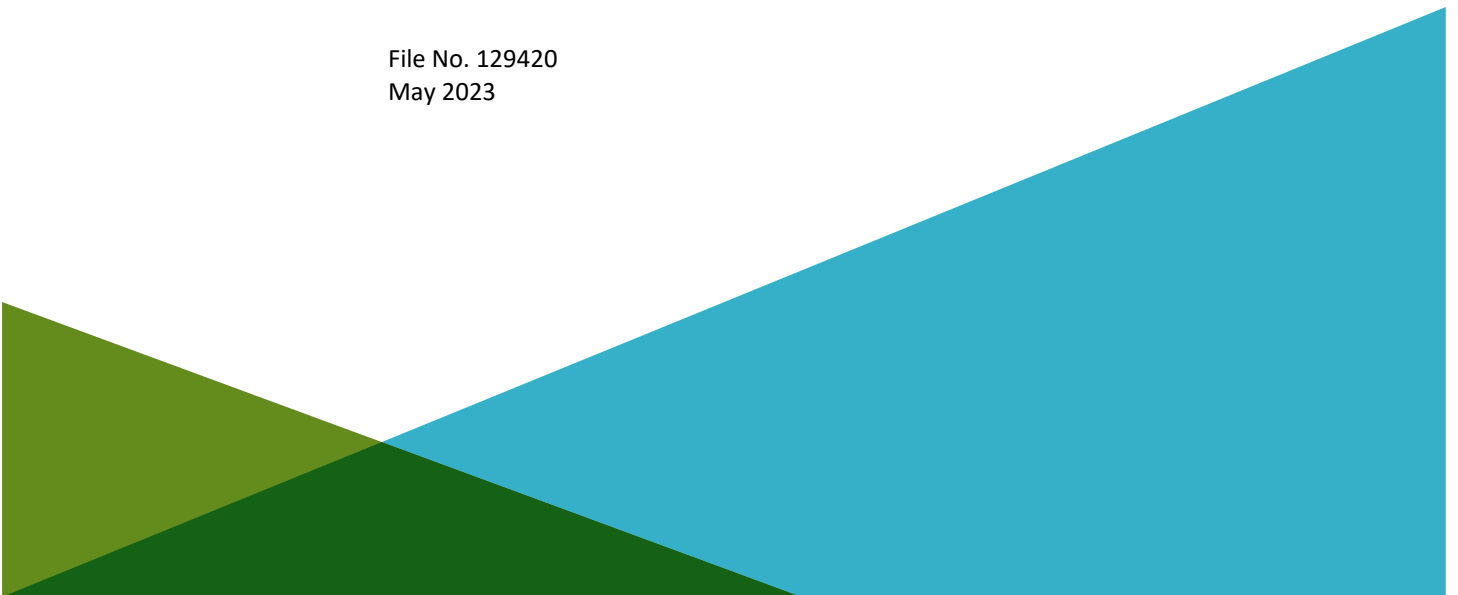


2018 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT ADDENDUM
ASH POND
A.B. BROWN GENERATING STATION
POSEY COUNTY, INDIANA

by
Haley & Aldrich, Inc.
Greenville, South Carolina

for
Southern Indiana Gas and Electric Company
Evansville, Indiana

File No. 129420
May 2023





HALEY & ALDRICH, INC.
400 Augusta Street
Suite 100
Greenville, SC 29601
864.214.8750

15 May 2023
File No. 129420

SUBJECT: 2018 Annual Groundwater Monitoring and Corrective Action Report Addendum
Southern Indiana Gas and Electric Company
Ash Pond
A.B. Brown Generating Station; Posey County, Indiana

The Ash Pond at A.B. Brown Generating Station is subject to the groundwater monitoring and corrective action requirements described under 40 CFR § 257.90 through § 257.98 (Rule). An *Annual Groundwater Monitoring and Corrective Action Report* (Annual Groundwater Report) documenting the activities in 2018 for the Ash Pond was completed and placed in the facilities operating record on 31 January 2019, as required by the Rule. The Annual Groundwater Report contained the specific information listed in § 257.90(e).

This addendum has been prepared to supplement the operating record in recognition of comments issued by the United States Environmental Protection Agency (U.S. EPA) on 11 January 2022, to various utilities regarding their respective Part A extension applications, and U.S. EPA's "proposed finding that GWMCA reports are incomplete and lack clarity of visual representation of data" in the proposed conditional approval for the A.B. Brown Generating Station that was released on 5 October 2022. Those comments, proposed findings, and U.S. EPA clarifications were understood to be U.S. EPA's expectations regarding the contents of the facility's Annual Groundwater Report. In addition to the information listed in § 257.90(e), the U.S. EPA indicated in their comments that annual reports should contain:

- water level gauging data for each sampling event, including groundwater elevation data, a determination of groundwater flow direction(s) and rate(s), and updated potentiometric surface map(s);
- laboratory analytical reports to verify that groundwater sampling and analysis requirements outlined in § 257.93 are being met; and finally,
- statistical analyses, including detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, and normality test results).

While this information is not specifically referred to in the in 257.90(e) of the Rule for inclusion in the annual reports, it has been routinely collected and maintained in Southern Indiana Gas and Electric Company's files, and is being provided in the attachments to this addendum as follows:

Attachment 1 – Groundwater Gauging Data

- Summary of groundwater gauging data

Attachment 2 – Updated Potentiometric Surface Map Containing Most Recent Groundwater Elevation Data

- Water table configuration map – June 2018
- Water table configuration map – August 2018

Water table maps include groundwater flow direction arrows and groundwater velocity calculations.

Attachment 3 – Laboratory Analytical Reports

- Laboratory data packages

Includes supporting information, such as, case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation.

Attachment 4 – Statistical Analyses

- Statistical evaluation of the November 2017 *Groundwater Assessment*

Includes a discussion of the statistical analysis utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against Groundwater Protection Standards), and supporting backup.

ATTACHMENT 1
Groundwater Gauging Data

VECTREN - AB BROWN STATION

Groundwater Sampling Event

Gauging Date: June 4, 2018

ATC Project No. 170LF00368

WELL ID	Date	DTW FROM TOC
CCR-AP-1R	6/4/2018	16.60
CCR-AP-2R	6/4/2018	43.00
CCR-AP-3R	6/4/2018	40.45
CCR-AP-4R	6/4/2018	34.35
CCR-AP-5	6/4/2018	36.78
CCR-AP-6	6/4/2018	19.45
CCR-AP-7R	6/4/2018	35.04
CCR-LF-1	6/4/2018	9.05
CCR-LF-2	6/4/2018	26.88
CCR-LF-3	6/4/2018	29.55
CCR-LF-4	6/4/2018	48.23
CCR-LF-5	6/4/2018	21.35
CCR-LF-6	6/4/2018	7.70
CCR-SP-1	6/4/2018	11.88
CCR-SP-2	6/4/2018	13.58
CCR-SP-3	6/4/2018	7.65
CCR-BK-1	6/4/2018	Dry
CCR-BK-2	6/4/2018	15.57

DTW= Depth to Water

TOC= Top of Casing

VECTREN - AB BROWN STATION

Groundwater Sampling Event

Gauging Date: August 20, 2018

ATC Project No. 170LF00577

WELL ID	GAUGE DATE	DTW FROM TOC
CCR-AP-1R	8/20/2018	17.40
CCR-AP-2R	8/20/2018	44.60
CCR-AP-3R	8/20/2018	40.60
CCR-AP-4R	8/20/2018	35.70
CCR-AP-5	8/20/2018	36.75
CCR-AP-6	8/20/2018	18.10
CCR-AP-7R	8/20/2018	35.41
CCR-LF-1	8/20/2018	10.65
CCR-LF-2	8/20/2018	26.97
CCR-LF-3	8/20/2018	29.43
CCR-LF-4	8/20/2018	48.09
CCR-LF-5	8/20/2018	21.95
CCR-LF-6	8/20/2018	7.90
CCR-SP-1	8/20/2018	13.65
CCR-SP-2	8/20/2018	15.15
CCR-SP-3	8/20/2018	9.48
CCR-BK-1R	8/20/2018	61.80 (below pump)
CCR-BK-2	8/20/2018	21.25

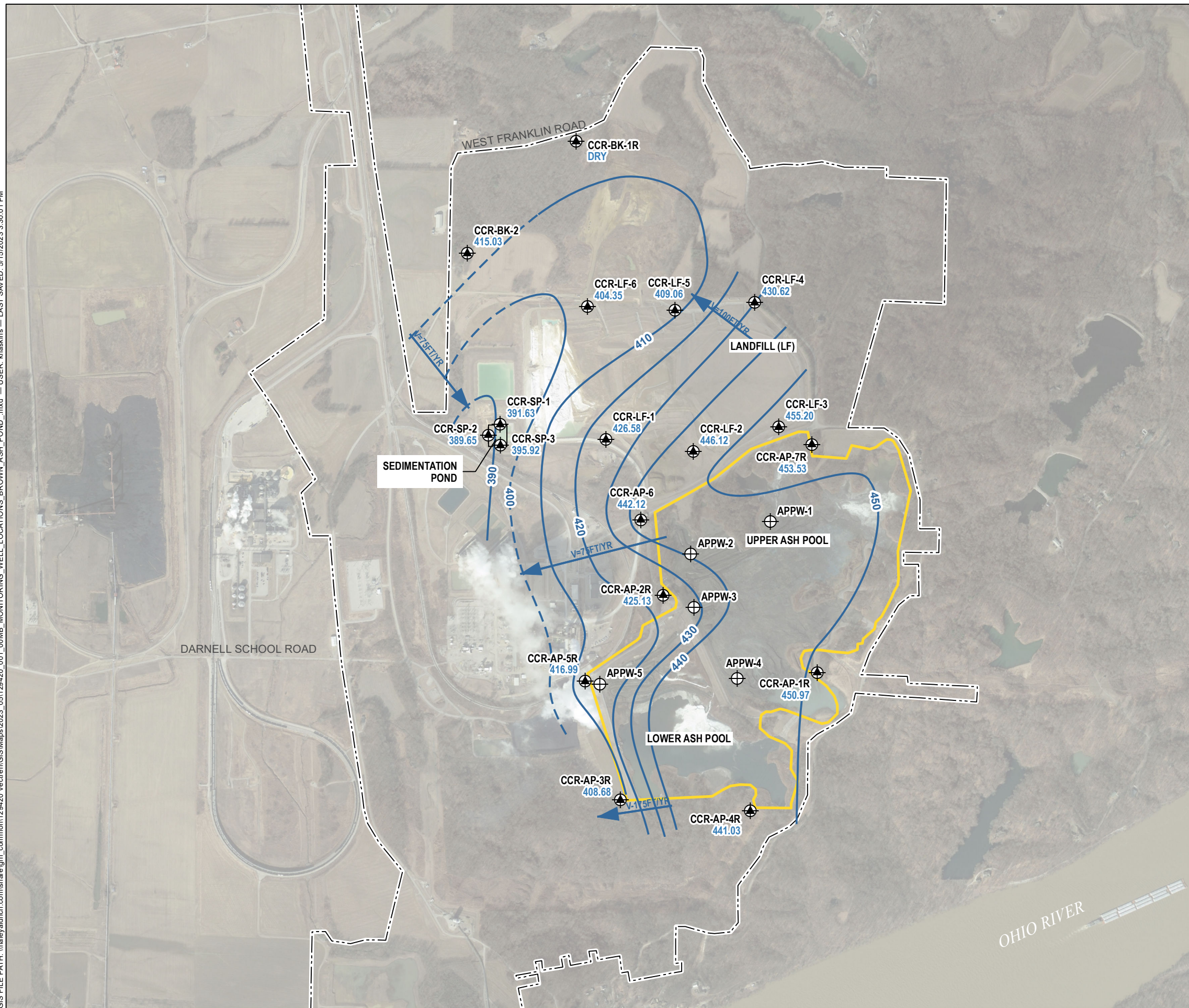
DTW= Depth to Water

TOC= Top of Casing

ATTACHMENT 2

**Updated Potentiometric Surface Map Containing Most
Recent Groundwater Elevation Data**

GIS FILE PATH: \\haleyaldrich.com\share\grn_common\129420_Vectrent\GIS\Maps\2023_05\129420_001_001ME_MONITORING_WELL_LOCATIONS_BROWN_ASH_POND.mxd — USER: khaskins — LAST SAVED: 5/15/2023 3:30:01 PM



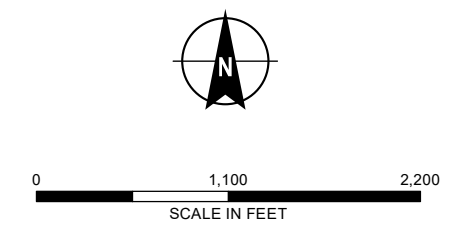
LEGEND

- CCR MONITORING WELL
- CCR PIEZOMETER WELL
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL, DASHED WHERE INFERRED
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE UNIT BOUNDARY
- SEDIMENTATION POND
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. CCR REGULATED UNITS INCLUDE THE ASH POND, LANDFILL, AND SEDIMENTATION POND.
3. GROUNDWATER ELEVATIONS WERE MEASURED 4 JUNE 2018.
4. APPROXIMATE GROUNDWATER FLOW RATE CALCULATED USING

$$V = \frac{k(i)}{n_e}$$
 WHERE:
 V = GROUNDWATER FLOW VELOCITY (FT/YR)
 k = HORIZONTAL HYDRAULIC CONDUCTIVITY (FT/DAY)
 i = HORIZONTAL GROUNDWATER GRADIENT (FT/FT)
 n_e = ASSUMED EFFECTIVE POROSITY
5. AERIAL IMAGERY SOURCE: GOOGLE, 2018



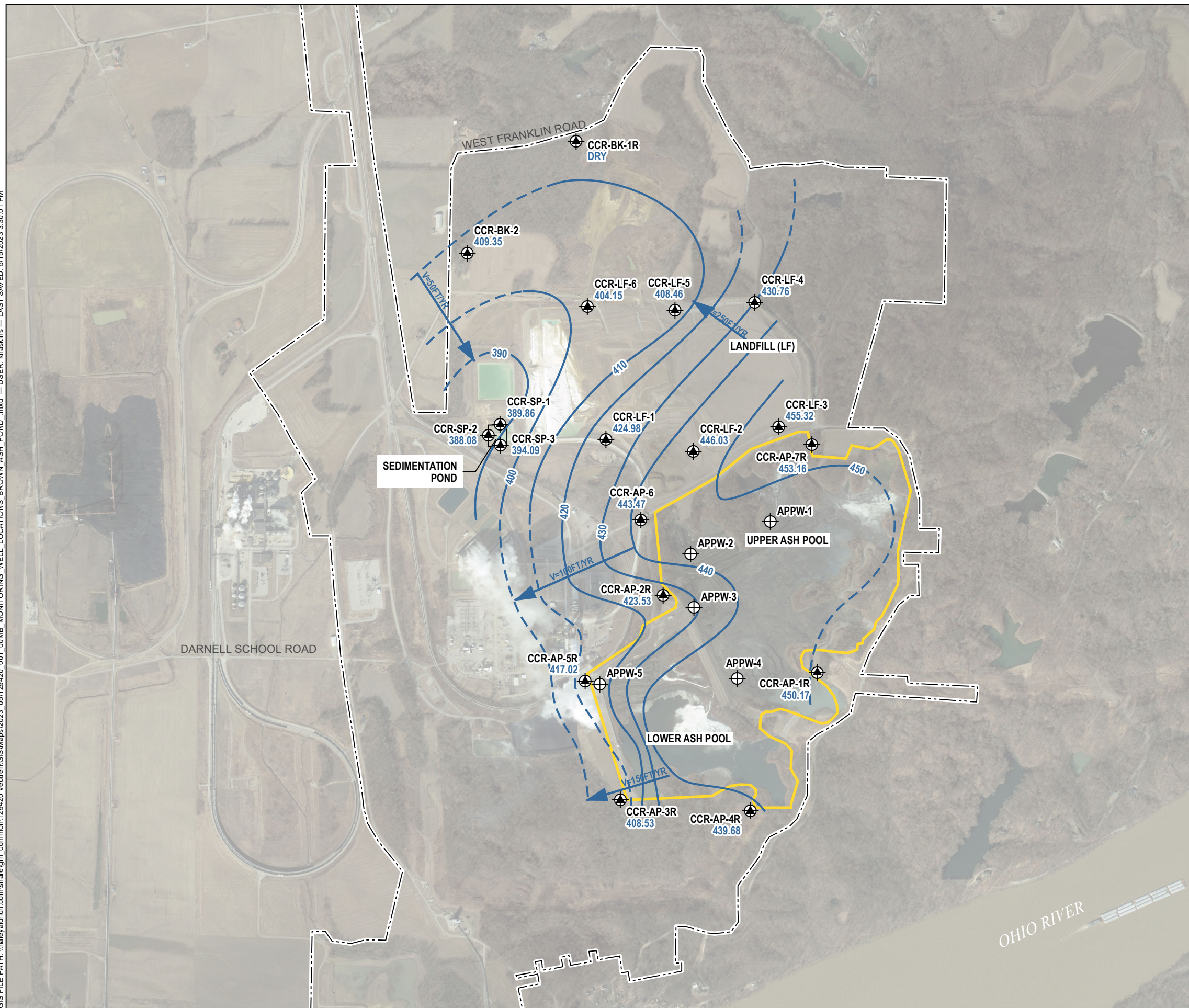
HALEY ALDRICH SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
 A.B. BROWN GENERATING STATION
 MOUNT VERNON, INDIANA

SHALLOW GROUNDWATER ELEVATION CONTOURS - JUNE 2018

JULY 2018

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\grn_common\129420_Vectrent\GIS\Maps\2023_08\129420_001_001ME_MONITORING_WELL_LOCATIONS_BROWN_ASH_POND.mxd — USER: khaskins — LAST SAVED: 5/15/2023 3:30:01 PM

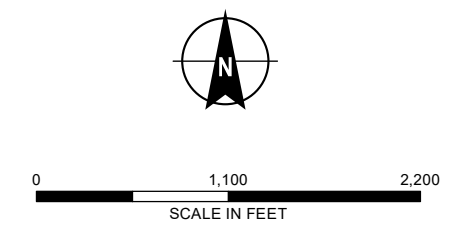


LEGEND

- CCR MONITORING WELL
- CCR PIEZOMETER WELL
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL, DASHED WHERE INFERRED
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE UNIT BOUNDARY
- SEDIMENTATION POND
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. CCR REGULATED UNITS INCLUDE THE ASH POND, LANDFILL, AND SEDIMENTATION POND.
3. GROUNDWATER ELEVATIONS WERE MEASURED 20 AUGUST 2018.
4. APPROXIMATE GROUNDWATER FLOW RATE CALCULATED USING $V = \frac{k(i)}{n_e}$
 WHERE:
 V = GROUNDWATER FLOW VELOCITY (FT/YR)
 k = HORIZONTAL HYDRAULIC CONDUCTIVITY (FT/DAY)
 i = HORIZONTAL GROUNDWATER GRADIENT (FT/FT)
 n_e = ASSUMED EFFECTIVE POROSITY
5. AERIAL IMAGERY SOURCE: GOOGLE, 2018



HALEY ALDRICH SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
 A.B. BROWN GENERATING STATION
 MOUNT VERNON, INDIANA

SHALLOW GROUNDWATER ELEVATION CONTOURS - AUGUST 2018

SEPTEMBER 2018

FIGURE 2

ATTACHMENT 3
Laboratory Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-78475-1

Client Project/Site: CCR Groundwater Monitoring AB Brown

Revision: 1

For:

Vectren Corporation

PO BOX 209

Evansville, Indiana 47702

Attn: Lisa Messinger



Authorized for release by:

7/24/2018 4:00:04 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

veronica.bortot@testamericainc.com

LINKS

Review your project
results through

Total Access

Have a Question?



Visit us at:

www.testamericainc.com

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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QC Sample Results	32
QC Association Summary	36
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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Job ID: 180-78475-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative 180-78475-1

REVISED : to correct the list of analytes that were initially reported on 7/16. Appendix IV list of analytes were to be reported

Comments

No additional comments.

Receipt

The samples were received on 6/7/2018 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.6° C, 3.5° C, 4.4° C and 5.2° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. There are no collection times listed on the COC for the following samples; however they are on the labels.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The tests are not checked on the COC for samples Blind Duplicate 3 and Field Blank 3 : however containers were received which were the same as the remaining samples and thus the same tests were chosen.

Anions

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

RAD

Method(s) PrecSep_0: Radium 228 Prep Batch 160-371238:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: CCR-SP-1 (180-78475-1), CCR-SP-2 (180-78475-2), CCR-SP-3 (180-78475-3), BLIND DUPLICATE 3 (180-78475-4), FIELD BLANK 3 (180-78475-5), CCR-LF-5 (180-78475-6), CCR-LF-6 (180-78475-7), CCR-AP-1R (180-78475-8), CCR-AP-2R (180-78475-9), CCR-AP-3R (180-78475-10), CCR-AP-4R (180-78475-11), CCR-AP-5 (180-78475-12), CCR-AP-7R (180-78475-13) and BLIND DUPLICATE 1 (180-78475-14). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep_0: Radium 228 Prep Batch 160-371238:

Sample aliquot reduced due to potential matrix interference. Sample was yellow, opaque, and contained sediment.
CCR-SP-2 (180-78475-2)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-371234:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: CCR-SP-1 (180-78475-1), CCR-SP-2 (180-78475-2), CCR-SP-3 (180-78475-3), BLIND DUPLICATE 3 (180-78475-4), FIELD BLANK 3 (180-78475-5), CCR-LF-5 (180-78475-6), CCR-LF-6 (180-78475-7), CCR-AP-1R (180-78475-8), CCR-AP-2R (180-78475-9), CCR-AP-3R (180-78475-10), CCR-AP-4R (180-78475-11), CCR-AP-5 (180-78475-12), CCR-AP-7R (180-78475-13) and BLIND DUPLICATE 1 (180-78475-14). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-371234:

Sample aliquot reduced due to potential matrix interference. Sample was yellow, opaque, and contained sediment.
CCR-SP-2 (180-78475-2)

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

Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Job ID: 180-78475-1 (Continued)

Laboratory: TestAmerica Pittsburgh (Continued)

Metals

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

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Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Qualifiers

HPLC/IC

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.

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.

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)

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Laboratory: TestAmerica Pittsburgh

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
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-18
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-18
Oregon	NELAP	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-18 *
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-18
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-18
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-18

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 *
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 *

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

TestAmerica Pittsburgh

Accreditation/Certification Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

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
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 Pittsburgh

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-78475-1	CCR-SP-1	Water	06/05/18 10:30	06/07/18 15:10
180-78475-2	CCR-SP-2	Water	06/05/18 13:45	06/07/18 15:10
180-78475-3	CCR-SP-3	Water	06/05/18 16:00	06/07/18 15:10
180-78475-4	BLIND DUPLICATE 3	Water	06/05/18 00:00	06/07/18 15:10
180-78475-5	FIELD BLANK 3	Water	06/05/18 00:00	06/07/18 15:10
180-78475-6	CCR-LF-5	Water	06/05/18 13:09	06/07/18 15:10
180-78475-7	CCR-LF-6	Water	06/05/18 14:33	06/07/18 15:10
180-78475-8	CCR-AP-1R	Water	06/06/18 13:45	06/07/18 15:10
180-78475-9	CCR-AP-2R	Water	06/06/18 17:45	06/07/18 15:10
180-78475-10	CCR-AP-3R	Water	06/06/18 11:00	06/07/18 15:10
180-78475-11	CCR-AP-4R	Water	06/06/18 12:30	06/07/18 15:10
180-78475-12	CCR-AP-5	Water	06/06/18 15:30	06/07/18 15:10
180-78475-13	CCR-AP-7R	Water	06/06/18 18:45	06/07/18 15:10
180-78475-14	BLIND DUPLICATE 1	Water	06/06/18 00:00	06/07/18 15:10

Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
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 PIT
7470A	Preparation, Mercury	SW846	TAL PIT
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 PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-SP-1

Date Collected: 06/05/18 10:30

Date Received: 06/07/18 15:10

Lab Sample ID: 180-78475-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 09:14	MJH	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:31	WTR	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:15	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:09	ALS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:26	ALS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-SP-2

Date Collected: 06/05/18 13:45

Date Received: 06/07/18 15:10

Lab Sample ID: 180-78475-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 07:42	MJH	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:34	WTR	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:16	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Prep	PrecSep-21			749.94 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:09	ALS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Prep	PrecSep_0			749.94 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:26	ALS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
		Instrument ID: NOEQUIP								

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-SP-3

Lab Sample ID: 180-78475-3

Date Collected: 06/05/18 16:00

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 06:35	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:37	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:19	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			999.81 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.81 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:26	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: BLIND DUPLICATE 3

Lab Sample ID: 180-78475-4

Date Collected: 06/05/18 00:00

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 09:45	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:40	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:19	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			999.96 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.96 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:26	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: FIELD BLANK 3

Lab Sample ID: 180-78475-5

Date Collected: 06/05/18 00:00

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 06:19	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:43	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:20	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			999.95 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.95 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:27	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-78475-6

Date Collected: 06/05/18 13:09

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			249212	07/02/18 12:54	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:46	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:21	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.27 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.27 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:27	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-78475-7

Date Collected: 06/05/18 14:33

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 10:16	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:49	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:22	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.43 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.43 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:27	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-AP-1R

Lab Sample ID: 180-78475-8

Date Collected: 06/06/18 13:45

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			249212	07/02/18 10:48	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 15:52	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:23	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:27	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-2R

Lab Sample ID: 180-78475-9

Date Collected: 06/06/18 17:45

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			249212	07/02/18 13:26	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 16:01	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:24	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.19 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.19 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:28	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-AP-3R

Lab Sample ID: 180-78475-10

Date Collected: 06/06/18 11:00

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			249212	07/02/18 13:58	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 16:03	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:25	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.73 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.73 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:28	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-78475-11

Date Collected: 06/06/18 12:30

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249212	07/02/18 08:13	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 16:06	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:26	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376324	07/17/18 21:10	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:28	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-78475-12

Date Collected: 06/06/18 15:30

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			249212	07/02/18 11:19	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 16:09	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:27	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.25 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376328	07/17/18 21:11	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.25 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:28	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-78475-13

Date Collected: 06/06/18 18:45

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			249212	07/02/18 12:23	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 16:12	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:30	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.25 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376328	07/17/18 21:11	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.25 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:28	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-78475-14

Date Collected: 06/06/18 00:00

Matrix: Water

Date Received: 06/07/18 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			249212	07/02/18 14:29	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	248970	06/28/18 17:50	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			249857	07/07/18 16:15	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249407	07/03/18 06:00	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:31	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	371234	06/19/18 12:59	JLC	TAL SL
Total/NA	Analysis	9315		1			376328	07/17/18 21:12	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	371238	06/19/18 13:35	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 15:28	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Analyst References:

Lab: TAL PIT

Batch Type: Prep

NAM = Nicole Marfisi

RJR = Ron Rosenbaum

Batch Type: Analysis

MJH = Matthew Hartman

RJR = Ron Rosenbaum

WTR = Bill Reinheimer

Lab: TAL SL

Batch Type: Prep

JLC = Jessica Chapman

Batch Type: Analysis

ALS = Aaron Schroder

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Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-SP-1

Lab Sample ID: 180-78475-1

Date Collected: 06/05/18 10:30

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.21		0.10	0.026	mg/L			07/02/18 09:14	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0046		0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:31	1
Barium	0.081		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:31	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:31	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:31	1
Cobalt	0.0071		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:31	1
Chromium	0.0011	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:31	1
Molybdenum	0.0013	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:31	1
Lead	0.000097	J	0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:31	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:31	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:31	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:31	1
Lithium	0.0051		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:31	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:15	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0465	U	0.146	0.146	1.00	0.280	pCi/L	06/19/18 12:59	07/17/18 21:09	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	93.5		40 - 110					06/19/18 12:59	07/17/18 21:09	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.208	U	0.235	0.236	1.00	0.448	pCi/L	06/19/18 13:35	07/17/18 15:26	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	93.5		40 - 110					06/19/18 13:35	07/17/18 15:26	1
<i>Y Carrier</i>	91.6		40 - 110					06/19/18 13:35	07/17/18 15:26	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.161	U	0.277	0.278	5.00	0.448	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-SP-2

Lab Sample ID: 180-78475-2

Date Collected: 06/05/18 13:45

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.37		0.10	0.026	mg/L			07/02/18 07:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00071	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:34	1
Barium	0.13		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:34	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:34	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:34	1
Cobalt	0.00065		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:34	1
Chromium	0.0014	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:34	1
Molybdenum	0.0012	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:34	1
Lead	0.00019	J	0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:34	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:34	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:34	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:34	1
Lithium	0.0069		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:34	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:16	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.461		0.293	0.296	1.00	0.385	pCi/L	06/19/18 12:59	07/17/18 21:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		40 - 110					06/19/18 12:59	07/17/18 21:09	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.118	U	0.282	0.282	1.00	0.487	pCi/L	06/19/18 13:35	07/17/18 15:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		40 - 110					06/19/18 13:35	07/17/18 15:26	1
Y Carrier	90.5		40 - 110					06/19/18 13:35	07/17/18 15:26	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.579		0.407	0.409	5.00	0.487	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-SP-3

Lab Sample ID: 180-78475-3

Date Collected: 06/05/18 16:00

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.30		0.10	0.026	mg/L			07/02/18 06:35	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0048		0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:37	1
Barium	0.067		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:37	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:37	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:37	1
Cobalt	0.00079		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:37	1
Chromium	0.0013	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:37	1
Molybdenum	0.0027	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:37	1
Lead	0.00020	J	0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:37	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:37	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:37	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:37	1
Lithium	0.0031	J	0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:37	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.168	U	0.153	0.154	1.00	0.221	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0474	U	0.190	0.190	1.00	0.352	pCi/L	06/19/18 13:35	07/17/18 15:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					06/19/18 13:35	07/17/18 15:26	1
Y Carrier	90.8		40 - 110					06/19/18 13:35	07/17/18 15:26	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.121	U	0.244	0.245	5.00	0.352	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: BLIND DUPLICATE 3

Lab Sample ID: 180-78475-4

Date Collected: 06/05/18 00:00

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.22		0.10	0.026	mg/L			07/02/18 09:45	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0039		0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:40	1
Barium	0.083		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:40	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:40	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:40	1
Cobalt	0.0066		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:40	1
Chromium	0.0012	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:40	1
Molybdenum	0.0011	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:40	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:40	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:40	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:40	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:40	1
Lithium	0.0053		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:40	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0918	U	0.165	0.165	1.00	0.293	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.196	U	0.205	0.206	1.00	0.334	pCi/L	06/19/18 13:35	07/17/18 15:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					06/19/18 13:35	07/17/18 15:26	1
Y Carrier	91.6		40 - 110					06/19/18 13:35	07/17/18 15:26	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.288	U	0.263	0.264	5.00	0.334	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: FIELD BLANK 3

Lab Sample ID: 180-78475-5

Date Collected: 06/05/18 00:00

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.026	mg/L			07/02/18 06:19	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00033	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:43	1
Barium	0.0011	J	0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:43	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:43	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:43	1
Cobalt	ND		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:43	1
Chromium	0.0011	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:43	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:43	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:43	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:43	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:43	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:43	1
Lithium	ND		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:43	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:20	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.123	U	0.149	0.149	1.00	0.243	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0565	U	0.178	0.179	1.00	0.333	pCi/L	06/19/18 13:35	07/17/18 15:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/19/18 13:35	07/17/18 15:27	1
Y Carrier	93.1		40 - 110					06/19/18 13:35	07/17/18 15:27	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0662	U	0.232	0.233	5.00	0.333	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-78475-6

Date Collected: 06/05/18 13:09

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.13	mg/L			07/02/18 12:54	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00065	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:46	1
Barium	0.026		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:46	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:46	1
Cadmium	0.00021	J	0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:46	1
Cobalt	0.00019	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:46	1
Chromium	0.0017	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:46	1
Molybdenum	0.00069	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:46	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:46	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:46	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:46	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:46	1
Lithium	0.019		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:46	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000086	J	0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:21	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.162	U	0.161	0.162	1.00	0.245	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0364	U	0.186	0.186	1.00	0.329	pCi/L	06/19/18 13:35	07/17/18 15:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					06/19/18 13:35	07/17/18 15:27	1
Y Carrier	92.7		40 - 110					06/19/18 13:35	07/17/18 15:27	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.198	U	0.246	0.247	5.00	0.329	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-78475-7

Date Collected: 06/05/18 14:33

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.51		0.10	0.026	mg/L			07/02/18 10:16	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00060	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:49	1
Barium	0.024		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:49	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:49	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:49	1
Cobalt	0.00021	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:49	1
Chromium	0.0014	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:49	1
Molybdenum	0.0012	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:49	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:49	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:49	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:49	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:49	1
Lithium	0.014		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:49	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:22	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.169	U	0.169	0.169	1.00	0.260	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.0736	U	0.174	0.174	1.00	0.302	pCi/L	06/19/18 13:35	07/17/18 15:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					06/19/18 13:35	07/17/18 15:27	1
Y Carrier	92.3		40 - 110					06/19/18 13:35	07/17/18 15:27	1

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Combined Radium 226 + 228	0.242	U	0.243	0.243	5.00	0.302	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-1R

Lab Sample ID: 180-78475-8

Date Collected: 06/06/18 13:45

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.49		0.25	0.066	mg/L			07/02/18 10:48	2.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00066	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 15:52	1
Barium	0.015		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 15:52	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 15:52	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 15:52	1
Cobalt	0.00021	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 15:52	1
Chromium	0.0010	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 15:52	1
Molybdenum	0.0028	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 15:52	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 15:52	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 15:52	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 15:52	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 15:52	1
Lithium	ND		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 15:52	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000085	J	0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:23	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.360		0.206	0.209	1.00	0.251	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0870	U	0.210	0.210	1.00	0.361	pCi/L	06/19/18 13:35	07/17/18 15:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					06/19/18 13:35	07/17/18 15:27	1
Y Carrier	91.6		40 - 110					06/19/18 13:35	07/17/18 15:27	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.447		0.294	0.296	5.00	0.361	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-2R

Lab Sample ID: 180-78475-9

Date Collected: 06/06/18 17:45

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.49	J	0.50	0.13	mg/L			07/02/18 13:26	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00091	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 16:01	1
Barium	0.043		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 16:01	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 16:01	1
Cadmium	0.00045	J	0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 16:01	1
Cobalt	0.0022		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 16:01	1
Chromium	0.0017	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 16:01	1
Molybdenum	1.9		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 16:01	1
Lead	0.00022	J	0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 16:01	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 16:01	1
Selenium	0.00083	J	0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 16:01	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 16:01	1
Lithium	0.044		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 16:01	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:24	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.139	U	0.149	0.150	1.00	0.233	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.393		0.223	0.226	1.00	0.334	pCi/L	06/19/18 13:35	07/17/18 15:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					06/19/18 13:35	07/17/18 15:28	1
Y Carrier	91.2		40 - 110					06/19/18 13:35	07/17/18 15:28	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.532		0.268	0.271	5.00	0.334	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-3R

Lab Sample ID: 180-78475-10

Date Collected: 06/06/18 11:00

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1.6		0.50	0.13	mg/L			07/02/18 13:58	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00064	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 16:03	1
Barium	0.016		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 16:03	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 16:03	1
Cadmium	0.00025	J	0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 16:03	1
Cobalt	0.00016	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 16:03	1
Chromium	0.0014	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 16:03	1
Molybdenum	1.0		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 16:03	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 16:03	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 16:03	1
Selenium	0.011		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 16:03	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 16:03	1
Lithium	0.076		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 16:03	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:25	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.136	U	0.152	0.153	1.00	0.243	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.223	U	0.177	0.179	1.00	0.278	pCi/L	06/19/18 13:35	07/17/18 15:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					06/19/18 13:35	07/17/18 15:28	1
Y Carrier	94.2		40 - 110					06/19/18 13:35	07/17/18 15:28	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.359		0.233	0.235	5.00	0.278	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-78475-11

Date Collected: 06/06/18 12:30

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.43		0.10	0.026	mg/L			07/02/18 08:13	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00061	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 16:06	1
Barium	0.098		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 16:06	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 16:06	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 16:06	1
Cobalt	0.00013	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 16:06	1
Chromium	0.0036		0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 16:06	1
Molybdenum	0.0016	J	0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 16:06	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 16:06	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 16:06	1
Selenium	0.0014	J	0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 16:06	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 16:06	1
Lithium	ND		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 16:06	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:26	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.216	U	0.172	0.173	1.00	0.239	pCi/L	06/19/18 12:59	07/17/18 21:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					06/19/18 12:59	07/17/18 21:10	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.354		0.222	0.224	1.00	0.337	pCi/L	06/19/18 13:35	07/17/18 15:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					06/19/18 13:35	07/17/18 15:28	1
Y Carrier	91.6		40 - 110					06/19/18 13:35	07/17/18 15:28	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.569		0.281	0.283	5.00	0.337	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-78475-12

Date Collected: 06/06/18 15:30

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.40		0.25	0.066	mg/L			07/02/18 11:19	2.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00050	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 16:09	1
Barium	0.016		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 16:09	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 16:09	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 16:09	1
Cobalt	0.00012	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 16:09	1
Chromium	0.0012	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 16:09	1
Molybdenum	0.054		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 16:09	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 16:09	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 16:09	1
Selenium	0.00085	J	0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 16:09	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 16:09	1
Lithium	0.013		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 16:09	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.234		0.171	0.173	1.00	0.230	pCi/L	06/19/18 12:59	07/17/18 21:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					06/19/18 12:59	07/17/18 21:11	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.225	U	0.221	0.222	1.00	0.359	pCi/L	06/19/18 13:35	07/17/18 15:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					06/19/18 13:35	07/17/18 15:28	1
Y Carrier	95.7		40 - 110					06/19/18 13:35	07/17/18 15:28	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.459		0.279	0.281	5.00	0.359	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-78475-13

Date Collected: 06/06/18 18:45

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.15	J	0.25	0.066	mg/L			07/02/18 12:23	2.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00083	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 16:12	1
Barium	0.032		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 16:12	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 16:12	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 16:12	1
Cobalt	0.00037	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 16:12	1
Chromium	0.0016	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 16:12	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 16:12	1
Lead	0.00013	J	0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 16:12	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 16:12	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 16:12	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 16:12	1
Lithium	0.020		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 16:12	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:30	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.186	U	0.168	0.169	1.00	0.252	pCi/L	06/19/18 12:59	07/17/18 21:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/19/18 12:59	07/17/18 21:11	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0364	U	0.199	0.199	1.00	0.350	pCi/L	06/19/18 13:35	07/17/18 15:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/19/18 13:35	07/17/18 15:28	1
Y Carrier	95.3		40 - 110					06/19/18 13:35	07/17/18 15:28	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.222	U	0.260	0.261	5.00	0.350	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-78475-14

Date Collected: 06/06/18 00:00

Matrix: Water

Date Received: 06/07/18 15:10

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	1.5		0.50	0.13	mg/L			07/02/18 14:29	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00058	J	0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 16:15	1
Barium	0.015		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 16:15	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 16:15	1
Cadmium	0.00023	J	0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 16:15	1
Cobalt	0.00015	J	0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 16:15	1
Chromium	0.0013	J	0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 16:15	1
Molybdenum	0.99		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 16:15	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 16:15	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 16:15	1
Selenium	0.010		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 16:15	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 16:15	1
Lithium	0.073		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 16:15	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:31	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.336		0.199	0.201	1.00	0.251	pCi/L	06/19/18 12:59	07/17/18 21:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/19/18 12:59	07/17/18 21:12	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.125	U	0.191	0.191	1.00	0.321	pCi/L	06/19/18 13:35	07/17/18 15:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/19/18 13:35	07/17/18 15:28	1
Y Carrier	95.3		40 - 110					06/19/18 13:35	07/17/18 15:28	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.461		0.276	0.277	5.00	0.321	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-249212/6
Matrix: Water
Analysis Batch: 249212

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.026	mg/L			07/02/18 05:27	1

Lab Sample ID: LCS 180-249212/5
Matrix: Water
Analysis Batch: 249212

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	26.4		mg/L		106	80 - 120
Fluoride	1.25	1.34		mg/L		107	80 - 120
Sulfate	25.0	26.4		mg/L		106	80 - 120

Lab Sample ID: 180-78475-3 MS
Matrix: Water
Analysis Batch: 249212

Client Sample ID: CCR-SP-3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	12		25.0	37.7		mg/L		103	80 - 120
Fluoride	0.30		1.25	1.57		mg/L		101	80 - 120
Sulfate	13		25.0	38.2		mg/L		102	80 - 120

Lab Sample ID: 180-78475-3 MSD
Matrix: Water
Analysis Batch: 249212

Client Sample ID: CCR-SP-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	12		25.0	37.8		mg/L		103	80 - 120	0	15
Fluoride	0.30		1.25	1.56		mg/L		101	80 - 120	0	15
Sulfate	13		25.0	38.4		mg/L		103	80 - 120	0	15

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

Lab Sample ID: MB 180-248970/1-A
Matrix: Water
Analysis Batch: 249857

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 248970

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		06/28/18 17:50	07/07/18 14:37	1
Barium	ND		0.010	0.00037	mg/L		06/28/18 17:50	07/07/18 14:37	1
Beryllium	ND		0.0010	0.000057	mg/L		06/28/18 17:50	07/07/18 14:37	1
Cadmium	ND		0.0010	0.00013	mg/L		06/28/18 17:50	07/07/18 14:37	1
Cobalt	ND		0.00050	0.000075	mg/L		06/28/18 17:50	07/07/18 14:37	1
Chromium	ND		0.0020	0.00063	mg/L		06/28/18 17:50	07/07/18 14:37	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/28/18 17:50	07/07/18 14:37	1
Lead	ND		0.0010	0.000094	mg/L		06/28/18 17:50	07/07/18 14:37	1
Antimony	ND		0.0020	0.0011	mg/L		06/28/18 17:50	07/07/18 14:37	1
Selenium	ND		0.0050	0.00081	mg/L		06/28/18 17:50	07/07/18 14:37	1
Thallium	ND		0.0010	0.000063	mg/L		06/28/18 17:50	07/07/18 14:37	1
Lithium	ND		0.0050	0.0026	mg/L		06/28/18 17:50	07/07/18 14:37	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

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

Lab Sample ID: LCS 180-248970/2-A
Matrix: Water
Analysis Batch: 249857

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 248970

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.0400	0.0417		mg/L		104	80 - 120
Barium	2.00	2.18		mg/L		109	80 - 120
Beryllium	0.0500	0.0464		mg/L		93	80 - 120
Calcium	50.0	52.0		mg/L		104	80 - 120
Cadmium	0.0500	0.0568		mg/L		114	80 - 120
Cobalt	0.500	0.458		mg/L		92	80 - 120
Chromium	0.200	0.199		mg/L		99	80 - 120
Molybdenum	1.00	1.02		mg/L		102	80 - 120
Lead	0.0200	0.0215		mg/L		107	80 - 120
Antimony	0.500	0.549		mg/L		110	80 - 120
Selenium	0.0100	0.0104		mg/L		104	80 - 120
Thallium	0.0500	0.0554		mg/L		111	80 - 120
Lithium	0.0500	0.0484		mg/L		97	80 - 120

Lab Sample ID: LCS 180-248970/2-A
Matrix: Water
Analysis Batch: 249960

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 248970

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.00	1.03		mg/L		103	80 - 120

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-249407/1-A
Matrix: Water
Analysis Batch: 249532

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249407

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:00	07/03/18 12:13	1

Lab Sample ID: LCS 180-249407/2-A
Matrix: Water
Analysis Batch: 249532

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00250	0.00232		mg/L		93	80 - 120

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-371234/23-A
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371234

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1807	U	0.162	0.163	1.00	0.241	pCi/L	06/19/18 12:59	07/17/18 21:12	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

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

Lab Sample ID: MB 160-371234/23-A
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371234

Carrier	<i>MB</i> %Yield	<i>MB</i> Qualifier	Limits
Ba Carrier	102		40 - 110

Prepared	Analyzed	Dil Fac
06/19/18 12:59	07/17/18 21:12	1

Lab Sample ID: LCS 160-371234/1-A
Matrix: Water
Analysis Batch: 376324

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371234

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.8	10.39		1.34	1.00	0.210	pCi/L	88	68 - 137

Carrier	<i>LCS</i> %Yield	<i>LCS</i> Qualifier	Limits
Ba Carrier	96.2		40 - 110

Lab Sample ID: LCSD 160-371234/2-A
Matrix: Water
Analysis Batch: 376324

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 371234

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.8	10.17		1.29	1.00	0.278	pCi/L	86	68 - 137	0.08	1

Carrier	<i>LCSD</i> %Yield	<i>LCSD</i> Qualifier	Limits
Ba Carrier	106		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-371238/23-A
Matrix: Water
Analysis Batch: 376323

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371238

Analyte	<i>MB</i> Result	<i>MB</i> Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2369	U	0.240	0.241	1.00	0.391	pCi/L	06/19/18 13:35	07/17/18 15:16	1

Carrier	<i>MB</i> %Yield	<i>MB</i> Qualifier	Limits
Ba Carrier	102		40 - 110
Y Carrier	90.1		40 - 110

Prepared	Analyzed	Dil Fac
06/19/18 13:35	07/17/18 15:16	1
06/19/18 13:35	07/17/18 15:16	1

Lab Sample ID: LCS 160-371238/1-A
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371238

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	8.14	8.469		0.993	1.00	0.334	pCi/L	104	56 - 140

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

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

Lab Sample ID: LCS 160-371238/1-A
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371238

	LCS	LCS	
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Ba Carrier	96.2		40 - 110
Y Carrier	92.3		40 - 110

Lab Sample ID: LCSD 160-371238/2-A
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 371238

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec.</i>		<i>RER</i>	
									<i>Limits</i>	<i>RER</i>	<i>Limit</i>	
Radium-228	8.14	8.860		1.03	1.00	0.411	pCi/L	109	56 - 140	0.19	1	

	LCSD	LCSD	
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Ba Carrier	106		40 - 110
Y Carrier	90.5		40 - 110



QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

HPLC/IC

Analysis Batch: 249212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total/NA	Water	EPA 9056A	
180-78475-2	CCR-SP-2	Total/NA	Water	EPA 9056A	
180-78475-3	CCR-SP-3	Total/NA	Water	EPA 9056A	
180-78475-4	BLIND DUPLICATE 3	Total/NA	Water	EPA 9056A	
180-78475-5	FIELD BLANK 3	Total/NA	Water	EPA 9056A	
180-78475-6	CCR-LF-5	Total/NA	Water	EPA 9056A	
180-78475-7	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-78475-8	CCR-AP-1R	Total/NA	Water	EPA 9056A	
180-78475-9	CCR-AP-2R	Total/NA	Water	EPA 9056A	
180-78475-10	CCR-AP-3R	Total/NA	Water	EPA 9056A	
180-78475-11	CCR-AP-4R	Total/NA	Water	EPA 9056A	
180-78475-12	CCR-AP-5	Total/NA	Water	EPA 9056A	
180-78475-13	CCR-AP-7R	Total/NA	Water	EPA 9056A	
180-78475-14	BLIND DUPLICATE 1	Total/NA	Water	EPA 9056A	
MB 180-249212/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-249212/5	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-78475-3 MS	CCR-SP-3	Total/NA	Water	EPA 9056A	
180-78475-3 MSD	CCR-SP-3	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 248970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total Recoverable	Water	3005A	
180-78475-2	CCR-SP-2	Total Recoverable	Water	3005A	
180-78475-3	CCR-SP-3	Total Recoverable	Water	3005A	
180-78475-4	BLIND DUPLICATE 3	Total Recoverable	Water	3005A	
180-78475-5	FIELD BLANK 3	Total Recoverable	Water	3005A	
180-78475-6	CCR-LF-5	Total Recoverable	Water	3005A	
180-78475-7	CCR-LF-6	Total Recoverable	Water	3005A	
180-78475-8	CCR-AP-1R	Total Recoverable	Water	3005A	
180-78475-9	CCR-AP-2R	Total Recoverable	Water	3005A	
180-78475-10	CCR-AP-3R	Total Recoverable	Water	3005A	
180-78475-11	CCR-AP-4R	Total Recoverable	Water	3005A	
180-78475-12	CCR-AP-5	Total Recoverable	Water	3005A	
180-78475-13	CCR-AP-7R	Total Recoverable	Water	3005A	
180-78475-14	BLIND DUPLICATE 1	Total Recoverable	Water	3005A	
MB 180-248970/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-248970/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 249407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total/NA	Water	7470A	
180-78475-2	CCR-SP-2	Total/NA	Water	7470A	
180-78475-3	CCR-SP-3	Total/NA	Water	7470A	
180-78475-4	BLIND DUPLICATE 3	Total/NA	Water	7470A	
180-78475-5	FIELD BLANK 3	Total/NA	Water	7470A	
180-78475-6	CCR-LF-5	Total/NA	Water	7470A	
180-78475-7	CCR-LF-6	Total/NA	Water	7470A	
180-78475-8	CCR-AP-1R	Total/NA	Water	7470A	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Metals (Continued)

Prep Batch: 249407 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-9	CCR-AP-2R	Total/NA	Water	7470A	
180-78475-10	CCR-AP-3R	Total/NA	Water	7470A	
180-78475-11	CCR-AP-4R	Total/NA	Water	7470A	
180-78475-12	CCR-AP-5	Total/NA	Water	7470A	
180-78475-13	CCR-AP-7R	Total/NA	Water	7470A	
180-78475-14	BLIND DUPLICATE 1	Total/NA	Water	7470A	
MB 180-249407/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-249407/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 249532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total/NA	Water	EPA 7470A	249407
180-78475-2	CCR-SP-2	Total/NA	Water	EPA 7470A	249407
180-78475-3	CCR-SP-3	Total/NA	Water	EPA 7470A	249407
180-78475-4	BLIND DUPLICATE 3	Total/NA	Water	EPA 7470A	249407
180-78475-5	FIELD BLANK 3	Total/NA	Water	EPA 7470A	249407
180-78475-6	CCR-LF-5	Total/NA	Water	EPA 7470A	249407
180-78475-7	CCR-LF-6	Total/NA	Water	EPA 7470A	249407
180-78475-8	CCR-AP-1R	Total/NA	Water	EPA 7470A	249407
180-78475-9	CCR-AP-2R	Total/NA	Water	EPA 7470A	249407
180-78475-10	CCR-AP-3R	Total/NA	Water	EPA 7470A	249407
180-78475-11	CCR-AP-4R	Total/NA	Water	EPA 7470A	249407
180-78475-12	CCR-AP-5	Total/NA	Water	EPA 7470A	249407
180-78475-13	CCR-AP-7R	Total/NA	Water	EPA 7470A	249407
180-78475-14	BLIND DUPLICATE 1	Total/NA	Water	EPA 7470A	249407
MB 180-249407/1-A	Method Blank	Total/NA	Water	EPA 7470A	249407
LCS 180-249407/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	249407

Analysis Batch: 249857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total Recoverable	Water	EPA 6020A	248970
180-78475-2	CCR-SP-2	Total Recoverable	Water	EPA 6020A	248970
180-78475-3	CCR-SP-3	Total Recoverable	Water	EPA 6020A	248970
180-78475-4	BLIND DUPLICATE 3	Total Recoverable	Water	EPA 6020A	248970
180-78475-5	FIELD BLANK 3	Total Recoverable	Water	EPA 6020A	248970
180-78475-6	CCR-LF-5	Total Recoverable	Water	EPA 6020A	248970
180-78475-7	CCR-LF-6	Total Recoverable	Water	EPA 6020A	248970
180-78475-8	CCR-AP-1R	Total Recoverable	Water	EPA 6020A	248970
180-78475-9	CCR-AP-2R	Total Recoverable	Water	EPA 6020A	248970
180-78475-10	CCR-AP-3R	Total Recoverable	Water	EPA 6020A	248970
180-78475-11	CCR-AP-4R	Total Recoverable	Water	EPA 6020A	248970
180-78475-12	CCR-AP-5	Total Recoverable	Water	EPA 6020A	248970
180-78475-13	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	248970
180-78475-14	BLIND DUPLICATE 1	Total Recoverable	Water	EPA 6020A	248970
MB 180-248970/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	248970
LCS 180-248970/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	248970

Analysis Batch: 249960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-248970/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	248970
LCS 180-248970/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	248970

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78475-1

Rad

Prep Batch: 371234

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total/NA	Water	PrecSep-21	
180-78475-2	CCR-SP-2	Total/NA	Water	PrecSep-21	
180-78475-3	CCR-SP-3	Total/NA	Water	PrecSep-21	
180-78475-4	BLIND DUPLICATE 3	Total/NA	Water	PrecSep-21	
180-78475-5	FIELD BLANK 3	Total/NA	Water	PrecSep-21	
180-78475-6	CCR-LF-5	Total/NA	Water	PrecSep-21	
180-78475-7	CCR-LF-6	Total/NA	Water	PrecSep-21	
180-78475-8	CCR-AP-1R	Total/NA	Water	PrecSep-21	
180-78475-9	CCR-AP-2R	Total/NA	Water	PrecSep-21	
180-78475-10	CCR-AP-3R	Total/NA	Water	PrecSep-21	
180-78475-11	CCR-AP-4R	Total/NA	Water	PrecSep-21	
180-78475-12	CCR-AP-5	Total/NA	Water	PrecSep-21	
180-78475-13	CCR-AP-7R	Total/NA	Water	PrecSep-21	
180-78475-14	BLIND DUPLICATE 1	Total/NA	Water	PrecSep-21	
MB 160-371234/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-371234/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-371234/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 371238

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78475-1	CCR-SP-1	Total/NA	Water	PrecSep_0	
180-78475-2	CCR-SP-2	Total/NA	Water	PrecSep_0	
180-78475-3	CCR-SP-3	Total/NA	Water	PrecSep_0	
180-78475-4	BLIND DUPLICATE 3	Total/NA	Water	PrecSep_0	
180-78475-5	FIELD BLANK 3	Total/NA	Water	PrecSep_0	
180-78475-6	CCR-LF-5	Total/NA	Water	PrecSep_0	
180-78475-7	CCR-LF-6	Total/NA	Water	PrecSep_0	
180-78475-8	CCR-AP-1R	Total/NA	Water	PrecSep_0	
180-78475-9	CCR-AP-2R	Total/NA	Water	PrecSep_0	
180-78475-10	CCR-AP-3R	Total/NA	Water	PrecSep_0	
180-78475-11	CCR-AP-4R	Total/NA	Water	PrecSep_0	
180-78475-12	CCR-AP-5	Total/NA	Water	PrecSep_0	
180-78475-13	CCR-AP-7R	Total/NA	Water	PrecSep_0	
180-78475-14	BLIND DUPLICATE 1	Total/NA	Water	PrecSep_0	
MB 160-371238/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-371238/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-371238/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Company Name: <i>Veronica Debra</i> Address: <i>PO Box 209</i> City/State/Zip: <i>Evansville</i> Phone: Fax:		Client Contact Project Name: <i>CCR Groundwater monitoring</i> Site: <i>AB</i> P.O.# <i>Purchase Order Requested</i>		Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other:		Project Manager: Tel/Fax:		Site Contact: <i>Alex Rose</i> Lab Contact: <i>Veronica Debra</i> Carrier:		COC No.: _____ of _____ COCs Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: <i>170LF00368</i>	
Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Date <i>6/6/18</i>		Sample Time _____		Sample Type (C=Comp, G=Grab) <i>G W</i>		Matrix _____		# of Cont. _____	
Sample Identification <i>CCR-AP-1R</i> <i>CCR-AP-2R</i> <i>CCR-AP-3R</i> <i>CCR-AP-4R</i> <i>CCR-AP-5</i> <i>CCR-AP-7R</i> <i>Blind Duplicate 1 6/5/18</i>		_____		_____		_____		_____		_____	
Filtered Sample (Y/N) _____		Perform MS/MSD (Y/N) _____		_____		_____		_____		_____	
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SHIP DATE: 06 JUN 18
ACTWT: 50.00 LB MAN
CAD: /POS1904
DIMS: 24x14x13 IN
BILL SENDER

VERONICA BERTOT
TEST AMERICA
301 ALPHA DR

PITTSBURGH PA 15234 15238

(812) 228-9422 REF: DEPT: PO1



THU - 07 JUN 3:00P
STANDARD OVERNIGHT

THU - 07 JUN AA 14
STANDARD OVERNIGHT

15238 PA-US PIT

65 AGCA

TRK# 8007 0823 2470

Uncorrected temp 2.6 °C
Thermometer ID 9

CF 0 Initials B

PT-WI-SR-001 effective 7/26/13

IF THIS SHIPMENT IS DELAYED IN TRANSIT,
STORE REFRIGERATED (2° TO 5° / 36° TO 47° F)

Part # 156297433

SHIP DATE: 06 JUN 18
ACTWT: 50.00 LB MAN
CAD: /POS1904
DIMS: 24x14x13 IN
BILL SENDER

VERONICA BERTOT
TEST AMERICA
301 ALPHA DR

PITTSBURGH PA 15234 15238

(812) 228-9422 REF: DEPT: PO1



THU - 07 JUN 3:00P
STANDARD OVERNIGHT

THU - 07 JUN AA 14
STANDARD OVERNIGHT

15238 PA-US PIT

65 AGCA

TRK# 8007 0823 2470

Uncorrected temp 2.6 °C
Thermometer ID 9

CF 0 Initials B

PT-WI-SR-001 effective 7/26/13

Part # 156297433

SHIP DATE: 06 JUN 18
ACTWT: 50.00 LB MAN
CAD: /POS1904
DIMS: 24x14x13 IN
BILL SENDER

ORIGIN ID: EVOA (317) 849-4990
ATC GROUP SERVICES
7986 CENTERPOTANT DR STE 100
INDIANAPOLIS IN 462569381

TO VERONICA BERTOT
TEST AMERICA
301 ALPHA DR

PITTSBURGH PA 15234 15238

(812) 228-9422 REF: DEPT: PO1



THU - 07 JUN 3:00P
STANDARD OVERNIGHT

FRI - 08 JUN AA
STANDARD OVERNIGHT

15238 PA-US

MPS# 7813 0607 0933
str# 8007 0823 2470

DEX 2 of 4
7813 0607 0933

65 AGCA

Uncorrected temp 4.9 °C
Thermometer ID 9

CF 0 Initials B

PT-WI-SR-001 effective 7/26/13

Temperature Control

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SHIP DATE: 06 JUN 18
ACTWGT: 50.00 LB MAN
CAD: POS1804
DIMS: 24x14x13 IN
BILL SENDER

ORIGIN ID: EVVA
ATC GROUP SERVICE
7988 CENTERPOINT DK
INDIANAPOLIS, IN 462
UNITED STATES US

TO: VERONICA BERTOT
TEST AMERICA
301 ALPHA DR

PITTSBURGH PA ~~15234~~
REF: (812) 228-9422
DEPT:

15238



THU - 07 JUN 3:00P
STANDARD OVERNIGHT

4 of 4
MPS# 7813 0607 0955
Mstr# 8007 0823 2470

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STANDARD OVERNIGHT

65 AGCA
MPS# 7813 0607 0955
Mstr# 8007 0823 2470

15238
PA-US
PIT

Uncorrected temp 5.2 °C
Thermometer ID 9
CF 0 Initials TB

PT-WI-SR-001 effective 7/26/13
FID 106442 07JUN18 P11A

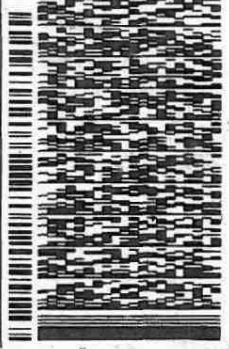
GIN ID: EVVA (317) 849-4990
GROUP SERVICES
7988 CENTERPOINT DR STE 100
INDIANAPOLIS, IN 462563381
UNITED STATES US

SHIP DATE: 06 JUN 18
ACTWGT: 50.00 LB MAN
CAD: POS1804
DIMS: 24x14x13 IN
BILL SENDER

TO: VERONICA BERTOT
TEST AMERICA
301 ALPHA DR

PITTSBURGH PA ~~15234~~
REF: (812) 228-9422
DEPT:

15238



3 of 4
MPS# 7813 0607 0944
Mstr# 8007 0823 2470

THU - 07 JUN 3:00P
STANDARD OVERNIGHT

FRI - 08 JUN AA
STANDARD OVERNIGHT

65 AGCA
MPS# 7813 0607 0944
Mstr# 8007 0823 2470

Uncorrected temp 3.5 °C
Thermometer ID 9
CF 0 Initials TB

PT-WI-SR-001 effective 7/26/13



Chain of Custody Record



TestAmerica Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone (412) 963-7058 Fax (412) 963-2468

Client Information (Sub Contract Lab)	Sampler:	Lab Pat:	Carrier Tracking No(s):	COC No:
Company: TestAmerica Laboratories, Inc.	Phone:	Bortol, Veronica	State of Origin: Indiana	180-330569_1
Address: 13715 Rider Trail North	Due Date Requested: 7/10/2018	E-Mail: veronica.bortol@testamericainc.com	Accreditations Required (See note):	Page: Page 1 of 2
City: Earth City	TAT Requested (days):			Job #: 180-78475-1
State, Zip: MO, 63045	PO #:			Preservation Codes:
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	WO #:			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 - EDTA M - Hexane N - None O - Ashtoz P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Z - other (Specify)
Project Name: CCR Groundwater Monitoring	Project #: 18018014			Other:
Site: SSO#:				

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=Water, S=Soil, O=Other, A=Air)	Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of containers	Special Instructions/Note:
					Field Filtered	MS/MSD	Field Filtered	MS/MSD		
CCR-SP-1 (180-78475-1)	6/5/18	10:30		Water	X	X	X	X	2	
CCR-SP-2 (180-78475-2)	6/5/18	13:45		Water	X	X	X	X	2	
CCR-SP-3 (180-78475-3)	6/5/18	16:00		Water	X	X	X	X	2	
BLIND DUPLICATE 3 (180-78475-4)	6/5/18			Water	X	X	X	X	2	
FIELD BLANK 3 (180-78475-5)	6/5/18			Water	X	X	X	X	2	
CCR-LF-5 (180-78475-6)	6/5/18	13:09		Water	X	X	X	X	2	
CCR-LF-6 (180-78475-7)	6/5/18	14:33		Water	X	X	X	X	2	
CCR-AP-1R (180-78475-8)	6/6/18	13:45		Water	X	X	X	X	2	
CCR-AP-2R (180-78475-9)	6/6/18	17:45		Water	X	X	X	X	2	

Note: Since laboratory accreditations are 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/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: 2

Special Instructions/QC Requirements: _____

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:	Date:	Time:	Method of Shipment:
Relinquished by: <i>[Signature]</i>	6/18/18	17:00	Company: TA Pitt
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:	

Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-78475-1

Login Number: 78475

List Number: 1

Creator: Watson, Debbie

List Source: TestAmerica Pittsburgh

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



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-78475-1

Login Number: 78475
List Number: 2
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 06/09/18 10:25 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-78556-1

Client Project/Site: CCR Groundwater Monitoring AB Brown

Revision: 2

For:

Vectren Corporation

PO BOX 209

Evansville, Indiana 47702

Attn: Lisa Messinger



Authorized for release by:

8/16/2018 6:41:51 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

veronica.bortot@testamericainc.com

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

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

PA Lab ID: 02-00416

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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Job ID: 180-78556-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative 180-78556-1

Revised 2 - to complete loggin checklist for St Louis sample receipt

REVISED : to correct the list of analytes that were initially reported on 7/16. Appendix IV list of analytes were to be reported

Comments

No additional comments.

Receipt

The samples were received on 6/9/2018 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.8° C, 3.2° C and 3.3° C.

Anions

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

RAD

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

Metals

Method(s) 7470A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 249408 were outside the control limits for mercury. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. A post digestion spike (PDS) was prepared and analyzed and it, too, failed low for this analyte.

Method(s) 6020A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 180-249058 and analytical batch 180-250457 were outside control limits for lithium. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 6020, 6020A: The following samples were diluted due to the nature of the sample matrix: CCR-LF-2 (180-78556-2), CCR-LF-2 (180-78556-2[MS]), CCR-LF-2 (180-78556-2[MSD]), CCR-LF-4 (180-78556-4), DUP2 (180-78556-8), (180-78556-E-2-A PDS) and (180-78556-E-2-A SD ^). Elevated reporting limits (RLs) are provided.

Method(s) 6020A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 180-249058 and analytical batch 180-250570 were outside control limits for multiple analytes. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 6020A: The post digestion spike % recovery for barium calcium and selenium associated with batch 180-250570 was outside of control limits.

Method(s) 200.8, 6020A: The following samples were diluted due to the nature of the sample matrix: CCR-LF-2 (180-78556-2), CCR-LF-2 (180-78556-2[MS]), CCR-LF-2 (180-78556-2[MSD]), CCR-LF-4 (180-78556-4), DUP2 (180-78556-8), (180-78556-E-2-A PDS) and (180-78556-E-2-A SD ^). Elevated reporting limits (RLs) are provided.

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

Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Qualifiers

HPLC/IC

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.

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.
F2	MS/MSD RPD exceeds control 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.

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)

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Laboratory: TestAmerica Pittsburgh

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
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-18
Oregon	NELAP	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-18 *
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-18

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 *
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *

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

TestAmerica Pittsburgh

Accreditation/Certification Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

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
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 Pittsburgh

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-78556-1	CCR-LF-1	Water	06/07/18 16:00	06/09/18 09:45
180-78556-2	CCR-LF-2	Water	06/07/18 10:15	06/09/18 09:45
180-78556-3	CCR-LF-3	Water	06/07/18 12:15	06/09/18 09:45
180-78556-4	CCR-LF-4	Water	06/08/18 11:45	06/09/18 09:45
180-78556-5	CCR-BK-1R	Water	06/08/18 15:00	06/09/18 09:45
180-78556-6	CCR-BK-2	Water	06/08/18 16:10	06/09/18 09:45
180-78556-7	CCR-AP-6	Water	06/07/18 19:20	06/09/18 09:45
180-78556-8	DUP2	Water	06/08/18 00:00	06/09/18 09:45
180-78556-9	FB1	Water	06/07/18 19:00	06/09/18 09:45
180-78556-10	FB2	Water	06/07/18 12:30	06/09/18 09:45



Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
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 PIT
7470A	Preparation, Mercury	SW846	TAL PIT
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 PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-LF-1

Date Collected: 06/07/18 16:00

Date Received: 06/09/18 09:45

Lab Sample ID: 180-78556-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249404	07/03/18 12:53	MJH	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 15:21	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 12:48	WTR	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:44	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Prep	PrecSep-21			999.93 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:54	ALS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Prep	PrecSep_0			999.93 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:24	ALS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-LF-2

Date Collected: 06/07/18 10:15

Date Received: 06/09/18 09:45

Lab Sample ID: 180-78556-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		25			249404	07/03/18 15:26	MJH	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			250570	07/14/18 10:11	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			250590	07/14/18 12:51	WTR	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:45	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Prep	PrecSep-21			1000.40 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:54	ALS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Prep	PrecSep_0			1000.40 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:24	ALS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
		Instrument ID: NOEQUIP								

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-78556-3

Date Collected: 06/07/18 12:15

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			249404	07/03/18 16:59	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 15:43	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 13:05	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:47	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:25	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-78556-4

Date Collected: 06/08/18 11:45

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		10			249404	07/03/18 14:25	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			250570	07/14/18 10:25	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			250590	07/14/18 13:08	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:48	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.63 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.63 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:25	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-78556-5

Date Collected: 06/08/18 15:00

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249404	07/03/18 12:37	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 15:49	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 13:17	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:49	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.07 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.07 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:25	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:40	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-78556-6

Date Collected: 06/08/18 16:10

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249404	07/03/18 17:30	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 15:52	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 13:20	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:50	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:25	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:43	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-AP-6

Lab Sample ID: 180-78556-7

Date Collected: 06/07/18 19:20

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249404	07/03/18 13:54	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 15:55	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 13:23	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:53	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.39 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.39 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376328	07/17/18 09:25	ALS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:43	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: DUP2

Lab Sample ID: 180-78556-8

Date Collected: 06/08/18 00:00

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		10			249404	07/03/18 14:56	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			250570	07/14/18 10:28	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			250590	07/14/18 13:26	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:54	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376324	07/17/18 09:27	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:43	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: FB1

Lab Sample ID: 180-78556-9

Date Collected: 06/07/18 19:00

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			249404	07/03/18 12:07	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 16:06	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 13:29	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:55	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.12 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.12 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1			376324	07/17/18 09:27	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:43	ALS	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: FB2

Lab Sample ID: 180-78556-10

Date Collected: 06/07/18 12:30

Matrix: Water

Date Received: 06/09/18 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1	1 mL	1.0 mL	249404	07/03/18 12:22	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250457	07/12/18 16:09	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	249058	06/29/18 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			250590	07/14/18 13:32	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	249408	07/03/18 06:02	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			249532	07/03/18 12:56	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Prep	PrecSep-21			1000.61 mL	1.0 g	372752	06/26/18 15:14	JLC	TAL SL
Total/NA	Analysis	9315		1			376391	07/18/18 07:55	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.61 mL	1.0 g	372755	06/26/18 15:43	JLC	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	376324	07/17/18 09:27	ALS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			376538	07/19/18 10:43	ALS	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Analyst References:

Lab: TAL PIT

Batch Type: Prep

NAM = Nicole Marfisi

RJR = Ron Rosenbaum

Batch Type: Analysis

MJH = Matthew Hartman

RJR = Ron Rosenbaum

RSK = Robert Kurtz

WTR = Bill Reinheimer

Lab: TAL SL

Batch Type: Prep

JLC = Jessica Chapman

Batch Type: Analysis

ALS = Aaron Schroder

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Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-78556-1

Date Collected: 06/07/18 16:00

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.27		0.10	0.026	mg/L			07/03/18 12:53	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00092	J	0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 15:21	1
Barium	0.045		0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 15:21	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 15:21	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 15:21	1
Cobalt	0.00022	J	0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 15:21	1
Chromium	0.0020		0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 15:21	1
Molybdenum	0.00083	J	0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 15:21	1
Lead	0.00021	J	0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 15:21	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 15:21	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 15:21	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 15:21	1
Lithium	0.0036	J	0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 12:48	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:44	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.299		0.173	0.175	1.00	0.221	pCi/L	06/26/18 15:14	07/18/18 07:54	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	103		40 - 110					06/26/18 15:14	07/18/18 07:54	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.446		0.243	0.247	1.00	0.361	pCi/L	06/26/18 15:43	07/17/18 09:24	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	103		40 - 110					06/26/18 15:43	07/17/18 09:24	1
<i>Y Carrier</i>	79.6		40 - 110					06/26/18 15:43	07/17/18 09:24	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.745		0.298	0.303	5.00	0.361	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-78556-2

Date Collected: 06/07/18 10:15

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		2.5	0.66	mg/L			07/03/18 15:26	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	F2	0.010	0.0032	mg/L		06/29/18 12:44	07/14/18 10:11	10
Barium	0.012	J F1 F2	0.10	0.0037	mg/L		06/29/18 12:44	07/14/18 10:11	10
Beryllium	ND	F1 F2	0.010	0.00057	mg/L		06/29/18 12:44	07/14/18 10:11	10
Cadmium	0.0039	J F1 F2	0.010	0.0013	mg/L		06/29/18 12:44	07/14/18 10:11	10
Cobalt	0.010	F2	0.0050	0.00075	mg/L		06/29/18 12:44	07/14/18 10:11	10
Chromium	ND	F2	0.020	0.0063	mg/L		06/29/18 12:44	07/14/18 10:11	10
Molybdenum	ND	F2	0.050	0.0047	mg/L		06/29/18 12:44	07/14/18 10:11	10
Lead	ND	F1 F2	0.010	0.00094	mg/L		06/29/18 12:44	07/14/18 10:11	10
Antimony	ND	F2	0.020	0.011	mg/L		06/29/18 12:44	07/14/18 10:11	10
Selenium	ND	F1 F2	0.050	0.0081	mg/L		06/29/18 12:44	07/14/18 10:11	10
Thallium	ND	F2	0.010	0.00063	mg/L		06/29/18 12:44	07/14/18 10:11	10
Lithium	ND	F2	0.050	0.026	mg/L		06/29/18 12:44	07/14/18 12:51	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	F1	0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:45	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.486		0.195	0.200	1.00	0.200	pCi/L	06/26/18 15:14	07/18/18 07:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					06/26/18 15:14	07/18/18 07:54	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.30		0.296	0.320	1.00	0.320	pCi/L	06/26/18 15:43	07/17/18 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					06/26/18 15:43	07/17/18 09:24	1
Y Carrier	81.5		40 - 110					06/26/18 15:43	07/17/18 09:24	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.79		0.354	0.377	5.00	0.320	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-78556-3

Date Collected: 06/07/18 12:15

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.20	J	0.25	0.066	mg/L			07/03/18 16:59	2.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00077	J	0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 15:43	1
Barium	0.029		0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 15:43	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 15:43	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 15:43	1
Cobalt	0.00033	J	0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 15:43	1
Chromium	0.0028		0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 15:43	1
Molybdenum	0.0014	J	0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 15:43	1
Lead	ND		0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 15:43	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 15:43	1
Selenium	0.0011	J	0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 15:43	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 15:43	1
Lithium	ND		0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 13:05	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:47	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.138	U	0.116	0.116	1.00	0.161	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.387		0.238	0.240	1.00	0.363	pCi/L	06/26/18 15:43	07/17/18 09:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					06/26/18 15:43	07/17/18 09:25	1
Y Carrier	85.6		40 - 110					06/26/18 15:43	07/17/18 09:25	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.525		0.265	0.267	5.00	0.363	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-78556-4

Date Collected: 06/08/18 11:45

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		1.0	0.26	mg/L			07/03/18 14:25	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015		0.010	0.0032	mg/L		06/29/18 12:44	07/14/18 10:25	10
Barium	0.011	J	0.10	0.0037	mg/L		06/29/18 12:44	07/14/18 10:25	10
Beryllium	ND		0.010	0.00057	mg/L		06/29/18 12:44	07/14/18 10:25	10
Cadmium	ND		0.010	0.0013	mg/L		06/29/18 12:44	07/14/18 10:25	10
Cobalt	0.0013	J	0.0050	0.00075	mg/L		06/29/18 12:44	07/14/18 10:25	10
Chromium	ND		0.020	0.0063	mg/L		06/29/18 12:44	07/14/18 10:25	10
Molybdenum	0.022	J	0.050	0.0047	mg/L		06/29/18 12:44	07/14/18 10:25	10
Lead	0.079		0.010	0.00094	mg/L		06/29/18 12:44	07/14/18 10:25	10
Antimony	ND		0.020	0.011	mg/L		06/29/18 12:44	07/14/18 10:25	10
Selenium	ND		0.050	0.0081	mg/L		06/29/18 12:44	07/14/18 10:25	10
Thallium	ND		0.010	0.00063	mg/L		06/29/18 12:44	07/14/18 10:25	10
Lithium	0.068		0.050	0.026	mg/L		06/29/18 12:44	07/14/18 13:08	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:48	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.06		0.443	0.522	1.00	0.210	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.18		0.320	0.338	1.00	0.409	pCi/L	06/26/18 15:43	07/17/18 09:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/26/18 15:43	07/17/18 09:25	1
Y Carrier	79.6		40 - 110					06/26/18 15:43	07/17/18 09:25	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	4.24		0.546	0.622	5.00	0.409	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-78556-5

Date Collected: 06/08/18 15:00

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.37		0.10	0.026	mg/L			07/03/18 12:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0011		0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 15:49	1
Barium	0.049		0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 15:49	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 15:49	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 15:49	1
Cobalt	0.00080		0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 15:49	1
Chromium	0.0030		0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 15:49	1
Molybdenum	0.0014	J	0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 15:49	1
Lead	0.00063	J	0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 15:49	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 15:49	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 15:49	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 15:49	1
Lithium	0.0036	J	0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 13:17	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:49	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.223		0.147	0.148	1.00	0.190	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.263	U	0.215	0.217	1.00	0.341	pCi/L	06/26/18 15:43	07/17/18 09:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					06/26/18 15:43	07/17/18 09:25	1
Y Carrier	90.1		40 - 110					06/26/18 15:43	07/17/18 09:25	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.486		0.260	0.263	5.00	0.341	pCi/L		07/19/18 10:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-78556-6

Date Collected: 06/08/18 16:10

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.16		0.10	0.026	mg/L			07/03/18 17:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00055	J	0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 15:52	1
Barium	0.037		0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 15:52	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 15:52	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 15:52	1
Cobalt	0.000098	J	0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 15:52	1
Chromium	0.0011	J	0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 15:52	1
Molybdenum	0.00051	J	0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 15:52	1
Lead	ND		0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 15:52	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 15:52	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 15:52	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 15:52	1
Lithium	ND		0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 13:20	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:50	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0863	U	0.108	0.108	1.00	0.177	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.230	U	0.193	0.194	1.00	0.306	pCi/L	06/26/18 15:43	07/17/18 09:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					06/26/18 15:43	07/17/18 09:25	1
Y Carrier	89.0		40 - 110					06/26/18 15:43	07/17/18 09:25	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.316		0.221	0.222	5.00	0.306	pCi/L		07/19/18 10:43	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: CCR-AP-6

Lab Sample ID: 180-78556-7

Date Collected: 06/07/18 19:20

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.23		0.10	0.026	mg/L			07/03/18 13:54	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0011		0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 15:55	1
Barium	0.022		0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 15:55	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 15:55	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 15:55	1
Cobalt	0.0011		0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 15:55	1
Chromium	0.0011	J	0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 15:55	1
Molybdenum	0.0064		0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 15:55	1
Lead	0.00013	J	0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 15:55	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 15:55	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 15:55	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 15:55	1
Lithium	0.026		0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 13:23	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:53	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0628	U	0.107	0.107	1.00	0.189	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.337		0.202	0.204	1.00	0.304	pCi/L	06/26/18 15:43	07/17/18 09:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	108		40 - 110					06/26/18 15:43	07/17/18 09:25	1
Y Carrier	92.7		40 - 110					06/26/18 15:43	07/17/18 09:25	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.400		0.229	0.230	5.00	0.304	pCi/L		07/19/18 10:43	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: DUP2
Date Collected: 06/08/18 00:00
Date Received: 06/09/18 09:45

Lab Sample ID: 180-78556-8
Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		1.0	0.26	mg/L			07/03/18 14:56	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.010		0.010	0.0032	mg/L		06/29/18 12:44	07/14/18 10:28	10
Barium	0.0079	J	0.10	0.0037	mg/L		06/29/18 12:44	07/14/18 10:28	10
Beryllium	ND		0.010	0.00057	mg/L		06/29/18 12:44	07/14/18 10:28	10
Cadmium	ND		0.010	0.0013	mg/L		06/29/18 12:44	07/14/18 10:28	10
Cobalt	0.00079	J	0.0050	0.00075	mg/L		06/29/18 12:44	07/14/18 10:28	10
Chromium	ND		0.020	0.0063	mg/L		06/29/18 12:44	07/14/18 10:28	10
Molybdenum	0.014	J	0.050	0.0047	mg/L		06/29/18 12:44	07/14/18 10:28	10
Lead	ND		0.010	0.00094	mg/L		06/29/18 12:44	07/14/18 10:28	10
Antimony	ND		0.020	0.011	mg/L		06/29/18 12:44	07/14/18 10:28	10
Selenium	ND		0.050	0.0081	mg/L		06/29/18 12:44	07/14/18 10:28	10
Thallium	ND		0.010	0.00063	mg/L		06/29/18 12:44	07/14/18 10:28	10
Lithium	0.046	J	0.050	0.026	mg/L		06/29/18 12:44	07/14/18 13:26	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:54	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.08		0.443	0.523	1.00	0.188	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.18		0.296	0.315	1.00	0.365	pCi/L	06/26/18 15:43	07/17/18 09:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					06/26/18 15:43	07/17/18 09:27	1
Y Carrier	89.0		40 - 110					06/26/18 15:43	07/17/18 09:27	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	4.27		0.533	0.611	5.00	0.365	pCi/L		07/19/18 10:43	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: FB1

Lab Sample ID: 180-78556-9

Date Collected: 06/07/18 19:00

Matrix: Water

Date Received: 06/09/18 09:45

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.026	mg/L			07/03/18 12:07	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00034	J	0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 16:06	1
Barium	0.0020	J	0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 16:06	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 16:06	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 16:06	1
Cobalt	ND		0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 16:06	1
Chromium	0.00093	J	0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 16:06	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 16:06	1
Lead	ND		0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 16:06	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 16:06	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 16:06	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 16:06	1
Lithium	ND		0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 13:29	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:55	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0758	U	0.105	0.106	1.00	0.178	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.372		0.224	0.227	1.00	0.340	pCi/L	06/26/18 15:43	07/17/18 09:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					06/26/18 15:43	07/17/18 09:27	1
Y Carrier	89.3		40 - 110					06/26/18 15:43	07/17/18 09:27	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.448		0.247	0.251	5.00	0.340	pCi/L		07/19/18 10:43	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Client Sample ID: FB2
Date Collected: 06/07/18 12:30
Date Received: 06/09/18 09:45

Lab Sample ID: 180-78556-10
Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.026	mg/L			07/03/18 12:22	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00057	J	0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 16:09	1
Barium	0.0013	J	0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 16:09	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 16:09	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 16:09	1
Cobalt	ND		0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 16:09	1
Chromium	0.0013	J	0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 16:09	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 16:09	1
Lead	ND		0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 16:09	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 16:09	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 16:09	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 16:09	1
Lithium	ND		0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 13:32	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:56	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0760	U	0.111	0.111	1.00	0.189	pCi/L	06/26/18 15:14	07/18/18 07:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					06/26/18 15:14	07/18/18 07:55	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.323	U	0.237	0.239	1.00	0.371	pCi/L	06/26/18 15:43	07/17/18 09:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					06/26/18 15:43	07/17/18 09:27	1
Y Carrier	81.1		40 - 110					06/26/18 15:43	07/17/18 09:27	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.399		0.262	0.264	5.00	0.371	pCi/L		07/19/18 10:43	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-249404/6
Matrix: Water
Analysis Batch: 249404

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.026	mg/L			07/03/18 06:49	1

Lab Sample ID: LCS 180-249404/5
Matrix: Water
Analysis Batch: 249404

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	26.5		mg/L		106	80 - 120
Fluoride	1.25	1.31		mg/L		105	80 - 120
Sulfate	25.0	26.1		mg/L		104	80 - 120

Lab Sample ID: 180-78556-2 MS
Matrix: Water
Analysis Batch: 249404

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	370		6250	6780		mg/L		103	80 - 120
Fluoride	ND		313	328		mg/L		105	80 - 120
Sulfate	16000		6250	22300		mg/L		101	80 - 120

Lab Sample ID: 180-78556-2 MSD
Matrix: Water
Analysis Batch: 249404

Client Sample ID: CCR-LF-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	370		6250	6790		mg/L		103	80 - 120	0	15
Fluoride	ND		313	330		mg/L		105	80 - 120	1	15
Sulfate	16000		6250	22300		mg/L		101	80 - 120	0	15

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

Lab Sample ID: MB 180-249058/1-A
Matrix: Water
Analysis Batch: 250457

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		06/29/18 12:44	07/12/18 14:46	1
Barium	ND		0.010	0.00037	mg/L		06/29/18 12:44	07/12/18 14:46	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/12/18 14:46	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/12/18 14:46	1
Cobalt	ND		0.00050	0.000075	mg/L		06/29/18 12:44	07/12/18 14:46	1
Chromium	ND		0.0020	0.00063	mg/L		06/29/18 12:44	07/12/18 14:46	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/29/18 12:44	07/12/18 14:46	1
Lead	ND		0.0010	0.000094	mg/L		06/29/18 12:44	07/12/18 14:46	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/12/18 14:46	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/12/18 14:46	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/12/18 14:46	1
Lithium	ND		0.0050	0.0026	mg/L		06/29/18 12:44	07/12/18 14:46	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

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

Lab Sample ID: MB 180-249058/1-A
Matrix: Water
Analysis Batch: 250590

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		06/29/18 12:44	07/14/18 12:42	1
Barium	ND		0.010	0.00037	mg/L		06/29/18 12:44	07/14/18 12:42	1
Beryllium	ND		0.0010	0.000057	mg/L		06/29/18 12:44	07/14/18 12:42	1
Cadmium	ND		0.0010	0.00013	mg/L		06/29/18 12:44	07/14/18 12:42	1
Cobalt	ND		0.00050	0.000075	mg/L		06/29/18 12:44	07/14/18 12:42	1
Chromium	ND		0.0020	0.00063	mg/L		06/29/18 12:44	07/14/18 12:42	1
Molybdenum	ND		0.0050	0.00047	mg/L		06/29/18 12:44	07/14/18 12:42	1
Lead	ND		0.0010	0.000094	mg/L		06/29/18 12:44	07/14/18 12:42	1
Antimony	ND		0.0020	0.0011	mg/L		06/29/18 12:44	07/14/18 12:42	1
Selenium	ND		0.0050	0.00081	mg/L		06/29/18 12:44	07/14/18 12:42	1
Thallium	ND		0.0010	0.000063	mg/L		06/29/18 12:44	07/14/18 12:42	1
Lithium	ND		0.0050	0.0026	mg/L		06/29/18 12:44	07/14/18 12:42	1

Lab Sample ID: LCS 180-249058/2-A
Matrix: Water
Analysis Batch: 250457

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0400	0.0412		mg/L		103	80 - 120
Barium	2.00	2.22		mg/L		111	80 - 120
Beryllium	0.0500	0.0456		mg/L		91	80 - 120
Calcium	50.0	54.2		mg/L		108	80 - 120
Cadmium	0.0500	0.0567		mg/L		113	80 - 120
Cobalt	0.500	0.505		mg/L		101	80 - 120
Chromium	0.200	0.202		mg/L		101	80 - 120
Molybdenum	1.00	1.01		mg/L		101	80 - 120
Lead	0.0200	0.0216		mg/L		108	80 - 120
Antimony	0.500	0.554		mg/L		111	80 - 120
Selenium	0.0100	0.00974		mg/L		97	80 - 120
Thallium	0.0500	0.0561		mg/L		112	80 - 120
Lithium	0.0500	0.0492		mg/L		98	80 - 120

Lab Sample ID: LCS 180-249058/2-A
Matrix: Water
Analysis Batch: 250590

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0400	0.0395		mg/L		99	80 - 120
Barium	2.00	2.07		mg/L		104	80 - 120
Beryllium	0.0500	0.0470		mg/L		94	80 - 120
Calcium	50.0	55.0		mg/L		110	80 - 120
Cadmium	0.0500	0.0555		mg/L		111	80 - 120
Cobalt	0.500	0.495		mg/L		99	80 - 120
Chromium	0.200	0.221		mg/L		111	80 - 120
Molybdenum	1.00	1.05		mg/L		105	80 - 120
Lead	0.0200	0.0224		mg/L		112	80 - 120
Antimony	0.500	0.534		mg/L		107	80 - 120
Selenium	0.0100	0.0101		mg/L		101	80 - 120

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

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

Lab Sample ID: LCS 180-249058/2-A
Matrix: Water
Analysis Batch: 250590

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Thallium	0.0500	0.0552		mg/L		110	80 - 120
Lithium	0.0500	0.0403		mg/L		81	80 - 120

Lab Sample ID: LCS 180-249058/2-A
Matrix: Water
Analysis Batch: 250589

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.891		mg/L		89	80 - 120

Lab Sample ID: 180-78556-2 MS
Matrix: Water
Analysis Batch: 250570

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND	F2	0.0400	0.0435		mg/L		109	75 - 125
Barium	0.012	J F1 F2	2.00	0.175	F1	mg/L		8	75 - 125
Beryllium	ND	F1 F2	0.0500	0.0470		mg/L		94	75 - 125
Calcium	450	F2	50.0	492	4	mg/L		89	75 - 125
Cadmium	0.0039	J F1 F2	0.0500	0.0554		mg/L		103	75 - 125
Cobalt	0.010	F2	0.500	0.537		mg/L		105	75 - 125
Chromium	ND	F2	0.200	0.200		mg/L		100	75 - 125
Molybdenum	ND	F2	1.00	1.04		mg/L		104	75 - 125
Lead	ND	F1 F2	0.0200	0.0277	F1	mg/L		138	75 - 125
Antimony	ND	F2	0.500	0.506		mg/L		101	75 - 125
Selenium	ND	F1 F2	0.0100	0.0155	J F1	mg/L		155	75 - 125
Thallium	ND	F2	0.0500	0.0507		mg/L		101	75 - 125

Lab Sample ID: 180-78556-2 MS
Matrix: Water
Analysis Batch: 250590

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	ND	F2	0.0500	0.0603		mg/L		121	75 - 125

Lab Sample ID: 180-78556-2 MS
Matrix: Water
Analysis Batch: 250589

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	4.8	F2	1.00	5.65	4	mg/L		86	75 - 125

Lab Sample ID: 180-78556-2 MSD
Matrix: Water
Analysis Batch: 250570

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND	F2	0.0400	0.0336	F2	mg/L		84	75 - 125	26	20
Barium	0.012	J F1 F2	2.00	0.127	F1 F2	mg/L		6	75 - 125	31	20

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

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

Lab Sample ID: 180-78556-2 MSD
Matrix: Water
Analysis Batch: 250570

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
Beryllium	ND	F1 F2	0.0500	0.0366	F1 F2	mg/L		73	75 - 125	25	20	
Calcium	450	F2	50.0	371	4 F2	mg/L		-153	75 - 125	28	20	
Cadmium	0.0039	J F1 F2	0.0500	0.0360	F1 F2	mg/L		64	75 - 125	43	20	
Cobalt	0.010	F2	0.500	0.412	F2	mg/L		80	75 - 125	26	20	
Chromium	ND	F2	0.200	0.156	F2	mg/L		78	75 - 125	25	20	
Molybdenum	ND	F2	1.00	0.779	F2	mg/L		78	75 - 125	28	20	
Lead	ND	F1 F2	0.0200	0.0103	F1 F2	mg/L		51	75 - 125	92	20	
Antimony	ND	F2	0.500	0.383	F2	mg/L		77	75 - 125	28	20	
Selenium	ND	F1 F2	0.0100	0.00966	J F2	mg/L		97	75 - 125	46	20	
Thallium	ND	F2	0.0500	0.0383	F2	mg/L		77	75 - 125	28	20	

Lab Sample ID: 180-78556-2 MSD
Matrix: Water
Analysis Batch: 250590

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
Lithium	ND	F2	0.0500	0.0472	J F2	mg/L		94	75 - 125	24	20	

Lab Sample ID: 180-78556-2 MSD
Matrix: Water
Analysis Batch: 250589

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 249058

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
Boron	4.8	F2	1.00	4.32	4	mg/L		-47	75 - 125	27	20	

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-249408/1-A
Matrix: Water
Analysis Batch: 249532

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249408

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00020	0.000065	mg/L		07/03/18 06:02	07/03/18 12:42	1

Lab Sample ID: LCS 180-249408/2-A
Matrix: Water
Analysis Batch: 249532

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249408

Analyte	Spike	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	0.00250	0.00213		mg/L		85	80 - 120

Lab Sample ID: 180-78556-2 MS
Matrix: Water
Analysis Batch: 249532

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 249408

Analyte	Sample	Sample	Spike	MS MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	
Mercury	ND	F1	0.00100	0.000658	F1	mg/L		66	75 - 125	

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Method: EPA 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 180-78556-2 MSD
 Matrix: Water
 Analysis Batch: 249532

Client Sample ID: CCR-LF-2
 Prep Type: Total/NA
 Prep Batch: 249408

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Mercury	ND	F1	0.00100	0.000633	F1	mg/L		63	75 - 125	4	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-372752/22-A
 Matrix: Water
 Analysis Batch: 376391

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 372752

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04777	U	0.102	0.103	1.00	0.189	pCi/L	06/26/18 15:14	07/18/18 10:09	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					06/26/18 15:14	07/18/18 10:09	1

Lab Sample ID: LCS 160-372752/1-A
 Matrix: Water
 Analysis Batch: 376391

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 372752

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Radium-226	11.4	10.12		1.21	1.00	0.152	pCi/L	89	68 - 137
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	106		40 - 110						

Lab Sample ID: 180-78556-2 DU
 Matrix: Water
 Analysis Batch: 376391

Client Sample ID: CCR-LF-2
 Prep Type: Total/NA
 Prep Batch: 372752

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	Limit
Radium-226	0.486		0.3173		0.170	1.00	0.202	pCi/L	0.46	1
Carrier	%Yield	DU Qualifier	Limits							
Ba Carrier	104		40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-372755/22-A
 Matrix: Water
 Analysis Batch: 376324

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 372755

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.1397	U	0.189	0.189	1.00	0.361	pCi/L	06/26/18 15:43	07/17/18 09:28	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

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

Lab Sample ID: MB 160-372755/22-A
Matrix: Water
Analysis Batch: 376324

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 372755

Carrier	MB %Yield	MB Qualifier	Limits
Ba Carrier	105		40 - 110
Y Carrier	92.3		40 - 110

Prepared	Analyzed	Dil Fac
06/26/18 15:43	07/17/18 09:28	1
06/26/18 15:43	07/17/18 09:28	1

Lab Sample ID: LCS 160-372755/1-A
Matrix: Water
Analysis Batch: 376328

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 372755

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	8.14	8.127		0.960	1.00	0.355	pCi/L	100	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	106		40 - 110
Y Carrier	85.2		40 - 110

Lab Sample ID: 180-78556-2 DU
Matrix: Water
Analysis Batch: 376328

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 372755

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	1.30		1.412		0.333	1.00	0.343	pCi/L	0.17	1

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

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

Lab Sample ID: 180-78556-2 DU
Matrix: Water
Analysis Batch: 376538

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Combined Radium 226 + 228	1.79		1.730		0.374	5.00	0.343	pCi/L	0.08	

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

HPLC/IC

Analysis Batch: 249404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-78556-2	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-78556-3	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-78556-4	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-78556-5	CCR-BK-1R	Total/NA	Water	EPA 9056A	
180-78556-6	CCR-BK-2	Total/NA	Water	EPA 9056A	
180-78556-7	CCR-AP-6	Total/NA	Water	EPA 9056A	
180-78556-8	DUP2	Total/NA	Water	EPA 9056A	
180-78556-9	FB1	Total/NA	Water	EPA 9056A	
180-78556-10	FB2	Total/NA	Water	EPA 9056A	
MB 180-249404/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-249404/5	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-78556-2 MS	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-78556-2 MSD	CCR-LF-2	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 249058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total Recoverable	Water	3005A	
180-78556-2	CCR-LF-2	Total Recoverable	Water	3005A	
180-78556-3	CCR-LF-3	Total Recoverable	Water	3005A	
180-78556-4	CCR-LF-4	Total Recoverable	Water	3005A	
180-78556-5	CCR-BK-1R	Total Recoverable	Water	3005A	
180-78556-6	CCR-BK-2	Total Recoverable	Water	3005A	
180-78556-7	CCR-AP-6	Total Recoverable	Water	3005A	
180-78556-8	DUP2	Total Recoverable	Water	3005A	
180-78556-9	FB1	Total Recoverable	Water	3005A	
180-78556-10	FB2	Total Recoverable	Water	3005A	
MB 180-249058/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-249058/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-78556-2 MS	CCR-LF-2	Total Recoverable	Water	3005A	
180-78556-2 MSD	CCR-LF-2	Total Recoverable	Water	3005A	

Prep Batch: 249408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total/NA	Water	7470A	
180-78556-2	CCR-LF-2	Total/NA	Water	7470A	
180-78556-3	CCR-LF-3	Total/NA	Water	7470A	
180-78556-4	CCR-LF-4	Total/NA	Water	7470A	
180-78556-5	CCR-BK-1R	Total/NA	Water	7470A	
180-78556-6	CCR-BK-2	Total/NA	Water	7470A	
180-78556-7	CCR-AP-6	Total/NA	Water	7470A	
180-78556-8	DUP2	Total/NA	Water	7470A	
180-78556-9	FB1	Total/NA	Water	7470A	
180-78556-10	FB2	Total/NA	Water	7470A	
MB 180-249408/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-249408/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-78556-2 MS	CCR-LF-2	Total/NA	Water	7470A	
180-78556-2 MSD	CCR-LF-2	Total/NA	Water	7470A	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Metals (Continued)

Analysis Batch: 249532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total/NA	Water	EPA 7470A	249408
180-78556-2	CCR-LF-2	Total/NA	Water	EPA 7470A	249408
180-78556-3	CCR-LF-3	Total/NA	Water	EPA 7470A	249408
180-78556-4	CCR-LF-4	Total/NA	Water	EPA 7470A	249408
180-78556-5	CCR-BK-1R	Total/NA	Water	EPA 7470A	249408
180-78556-6	CCR-BK-2	Total/NA	Water	EPA 7470A	249408
180-78556-7	CCR-AP-6	Total/NA	Water	EPA 7470A	249408
180-78556-8	DUP2	Total/NA	Water	EPA 7470A	249408
180-78556-9	FB1	Total/NA	Water	EPA 7470A	249408
180-78556-10	FB2	Total/NA	Water	EPA 7470A	249408
MB 180-249408/1-A	Method Blank	Total/NA	Water	EPA 7470A	249408
LCS 180-249408/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	249408
180-78556-2 MS	CCR-LF-2	Total/NA	Water	EPA 7470A	249408
180-78556-2 MSD	CCR-LF-2	Total/NA	Water	EPA 7470A	249408

Analysis Batch: 250457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total Recoverable	Water	EPA 6020A	249058
180-78556-3	CCR-LF-3	Total Recoverable	Water	EPA 6020A	249058
180-78556-5	CCR-BK-1R	Total Recoverable	Water	EPA 6020A	249058
180-78556-6	CCR-BK-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-7	CCR-AP-6	Total Recoverable	Water	EPA 6020A	249058
180-78556-9	FB1	Total Recoverable	Water	EPA 6020A	249058
180-78556-10	FB2	Total Recoverable	Water	EPA 6020A	249058
MB 180-249058/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	249058
LCS 180-249058/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	249058

Analysis Batch: 250570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-2	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-4	CCR-LF-4	Total Recoverable	Water	EPA 6020A	249058
180-78556-8	DUP2	Total Recoverable	Water	EPA 6020A	249058
180-78556-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058

Analysis Batch: 250589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-249058/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	249058
LCS 180-249058/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	249058
180-78556-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058

Analysis Batch: 250590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total Recoverable	Water	EPA 6020A	249058
180-78556-2	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-3	CCR-LF-3	Total Recoverable	Water	EPA 6020A	249058
180-78556-4	CCR-LF-4	Total Recoverable	Water	EPA 6020A	249058
180-78556-5	CCR-BK-1R	Total Recoverable	Water	EPA 6020A	249058
180-78556-6	CCR-BK-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-7	CCR-AP-6	Total Recoverable	Water	EPA 6020A	249058

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-78556-1

Metals (Continued)

Analysis Batch: 250590 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-8	DUP2	Total Recoverable	Water	EPA 6020A	249058
180-78556-9	FB1	Total Recoverable	Water	EPA 6020A	249058
180-78556-10	FB2	Total Recoverable	Water	EPA 6020A	249058
MB 180-249058/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	249058
LCS 180-249058/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	249058
180-78556-2 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058
180-78556-2 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	249058

Rad

Prep Batch: 372752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total/NA	Water	PrecSep-21	
180-78556-2	CCR-LF-2	Total/NA	Water	PrecSep-21	
180-78556-3	CCR-LF-3	Total/NA	Water	PrecSep-21	
180-78556-4	CCR-LF-4	Total/NA	Water	PrecSep-21	
180-78556-5	CCR-BK-1R	Total/NA	Water	PrecSep-21	
180-78556-6	CCR-BK-2	Total/NA	Water	PrecSep-21	
180-78556-7	CCR-AP-6	Total/NA	Water	PrecSep-21	
180-78556-8	DUP2	Total/NA	Water	PrecSep-21	
180-78556-9	FB1	Total/NA	Water	PrecSep-21	
180-78556-10	FB2	Total/NA	Water	PrecSep-21	
MB 160-372752/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-372752/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-78556-2 DU	CCR-LF-2	Total/NA	Water	PrecSep-21	

Prep Batch: 372755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-78556-1	CCR-LF-1	Total/NA	Water	PrecSep_0	
180-78556-2	CCR-LF-2	Total/NA	Water	PrecSep_0	
180-78556-3	CCR-LF-3	Total/NA	Water	PrecSep_0	
180-78556-4	CCR-LF-4	Total/NA	Water	PrecSep_0	
180-78556-5	CCR-BK-1R	Total/NA	Water	PrecSep_0	
180-78556-6	CCR-BK-2	Total/NA	Water	PrecSep_0	
180-78556-7	CCR-AP-6	Total/NA	Water	PrecSep_0	
180-78556-8	DUP2	Total/NA	Water	PrecSep_0	
180-78556-9	FB1	Total/NA	Water	PrecSep_0	
180-78556-10	FB2	Total/NA	Water	PrecSep_0	
MB 160-372755/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-372755/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-78556-2 DU	CCR-LF-2	Total/NA	Water	PrecSep_0	

Regulatory Program: DW NPDES RCRA Other: _____

Project Manager: Mark Bielecki
Site Contact: Allen Rose
Lab Contact: Veronica DeLoraine
Date: 6/8/18

Company Name: ~~Veronica DeLoraine~~ Veronica
Address: PO Box 209
City/State/Zip: Exton, PA
Phone: _____
Fax: _____

Project Name: CR Groundwater Monitoring
Site: ~~CR Groundwater Monitoring~~ AB 300
PO# Purchase Order Requested

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 2 weeks 1 week 2 days 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform MS/MSD (Y/N)	Carrier	COC No.	of COCs
						Y	N				
CCR-LF-1	6/7/18	1600	G	W	5			X	9315-Ra226, 9320-Ra228		
CCR-LF-2	6/7/18	1015			1			X	8405-Calc-TDS		
CCR-LF-3	6/7/18	1215			10			X	6020A, 7470A		
MSMSD	6/7/18	1015			5			X	9040-C, 9056A-ORGEM-28D		
CCR-LF-4	6/8/18	1145			5						
Field Blank 2	6/7/18	1230			1						
Blind Duplicate 2	6/8/18	-			1						

Sample Specific Notes:
180-78556 Chain of Custody

Barcode: 180-78556 Chain of Custody

Preservation Used: Ice HCl H2SO4 HNO3 NaOH Other: _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
Appendix III & IV → see Veronca

Custody Seals Intact: Yes No

Relinquished by: ~~Jacob Wirsitt~~ ATC
Date/Time: 6/8/18: 1930
Company: Veronca

Received by: ~~Veronica DeLoraine~~ AT
Date/Time: 6-9-18 9:15
Company: Veronca

Therm ID No.: _____
Cooler Temp. (°C): Obs'd: _____
Corrd: _____

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)



TestAmerica Canton
4101 Shuffel Street, N. M.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

155603

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: DW NPDES RCRA Other:

Company Name: ~~Veronica~~ Vectren
Address: PO Box 709
City/State/Zip: Evansville
Phone:
Fax:
Project Name: CCR Groundwater monitoring
Site: ~~CCR Groundwater monitoring~~ AB Hwy
PO# Purchase Order Requested

Client Contact
Project Manager: Mark Brething
Tel/Fax:
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Allen Rose
Lab Contact: Veronica Decker
Carrier: ~~Veronica Decker~~

Date: 6/8/18
COC No. of COCs

Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.: 170LF00368

Sample Specific Notes:

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.
CCR-AP-6	6/7/18	1920	G	W	5
Field blank 1	6/7/18	1900	L	L	
CCR-BK-1R	6/8/18	1500	L	L	
CCR-BK-2	6/8/18	610	L	L	

Perform MS/MSD (Y/N) 9040 C, 9056 A
ORSEM-28D
6020 A, 7470 A
X 840 C-Gold-TDS
X 9315 Ra, 226, 9320
Ra 228

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
Appendix III & IV - see Veronica

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

Cooler Temp. (°C): Obs'd: _____ Cor'd: _____
Company: _____
Received by: _____ Date/Time: 6/8/18: 1930
Company: ATC
Received by: _____ Date/Time: _____
Company: _____
Received in Laboratory by: _____ Date/Time: _____



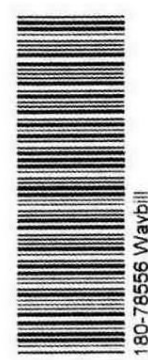
SHIP DATE: 08JUN18
ACTWT: 21.00 LB
CDO: /POS1904
DIMS: 23x14x13 IN
BILL SENDER

ORIGIN ID:EVVA (317) 89-4990
ATC GROUP SERVICES
7988 CENTERPOINT DR STE 100
INDIANAPOLIS, IN 462563381
UNITED STATES US

TO VERONICA BERTOT
TEST AMERICA
301 ALPHA DR
PITTSBURGH PA 15238
(812) 228-9422
PO1

2 or 3 Business Days
 FedEx 2Day A.M.
Second business day morning
Saturday Delivery NOT available
 FedEx 2Day
Second business afternoon* Thursday
will be delivered on Monday unless S&H
Delivery is selected.
 FedEx Express Saver
Third business day
Saturday Delivery NOT available.

Signature Options
 FedEX Box
 FedEX Tube
 FedEX Signature
FedEx Signature
Signature required at recipient's address
for delivery. Fee applies.
 Dry Ice
Dry ice (up to 10 lbs)
per container. Fee applies.
 Credit Card



180-76556 Waybill

P DATE: 08/18
FIG: 505190
IS: 24X14X
B SENDER

ORIGIN ID:EVVA (317) 89-4990
ATC GROUP SERVICES
7988 CENTERPOINT DR STE 100
INDIANAPOLIS, IN 462563381
UNITED STATES US

TO VERONICA BERTOT
TEST AMERICA
301 ALPHA DR
PITTSBURGH PA 15238
(812) 228-9422
PO1

REF: DEPT: 0200
MPS# 7813 4202 6442
Metr# 8007 0823 2460



FedEx
1118012601115

XO AGCA

SATURDAY 12:00P
PRIORITY OVERNIGHT

Uncorrected temp 31.2 °C
Thermometer ID 9
CF 0 Initials BS
PT-WI-SR-001 effective 7/26/13

15238
PA-US PIT



ID:EVVA (317) 849-4990
GROUP SERVICES
CENTERPOINT DR, STE 100
INDIANAPOLIS, IN 462563381
UNITED STATES US

SH L
ACCT: AJU
CAL/POSAC
DIM 24x14x9
BLENDED

TERONICA BERTOT
WEST AMERICA
101 ALPHA DR

PITTSBURGH PA 15238

(12) 228-8422

REF:

DEPT:



3 of 3

S# 7813 4202 6453

Istr# 8007 0823 2460

0200

SATURDAY
PRIORITY

XO AGCA

Uncorrected temp
Thermometer ID

28
°C

CF 0 Initials TS

PT-WI-SR-001 effective 7/26/13



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Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-78556-1

Login Number: 78556

List Number: 1

Creator: Watson, Debbie

List Source: TestAmerica Pittsburgh

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.	False	
COC is filled out in ink and legible.	N/A	
COC is filled out with all pertinent information.	N/A	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	N/A	
Samples are received within Holding Time (excluding tests with immediate HTs)	N/A	
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: Vectren Corporation

Job Number: 180-78556-1

Login Number: 78556
List Number: 2
Creator: Press, Nicholas B

List Source: TestAmerica St. Louis
List Creation: 06/13/18 04:48 PM

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



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-81110-1

Client Project/Site: CCR Groundwater AB Brown

For:

Vectren Corporation

PO BOX 209

Evansville, Indiana 47702

Attn: Accounts Payable



Authorized for release by:

10/11/2018 1:14:30 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

veronica.bortot@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

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.

PA Lab ID: 02-00416

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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Job ID: 180-81110-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative 180-81110-1

Comments

No additional comments.

Receipt

The samples were received on 8/22/2018 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.3° C, 3.9° C and 4.7° C.

GC Semi VOA

Method(s) 300.0, 9056A: The continuing calibration verification (CCV) associated with batch 180-255165 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. The following samples are impacted: CCR-LF-4 (180-81110-7), CCR-LF-5 (180-81110-8), (CCV 180-255165/28) and (CCV 180-255165/40).

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

RAD

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

Metals

Method(s) 6020A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 180-254968 and analytical batch 180-255492 were outside control limits for barium and selenium. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 6020A: The post digestion spike % recovery for calcium associated with batch 180-255492 was outside of control limits.

Method(s) 6020A: The following samples were diluted due to the nature of the sample matrix: CCR-LF-2 (180-81110-5), CCR-LF-2 (180-81110-5[MS]), CCR-LF-2 (180-81110-5[MSD]), (180-81110-E-5-C PDS ^10) and (180-81110-E-5-C SD ^50). Elevated reporting limits (RLs) are provided.

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

General Chemistry

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

Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Qualifiers

HPLC/IC

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.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

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

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)

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Laboratory: TestAmerica Pittsburgh

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
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-18
Oregon	NELAP	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-19

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	06-30-19
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	09-30-19
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

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

Accreditation/Certification Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

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
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 Pittsburgh

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-81110-1	CCR-AP-2R	Water	08/21/18 14:30	08/22/18 09:15
180-81110-2	CCR-AP-3R	Water	08/21/18 10:40	08/22/18 09:15
180-81110-3	CCR-AP-4R	Water	08/21/18 11:45	08/22/18 09:15
180-81110-4	CCR-AP-5	Water	08/21/18 13:00	08/22/18 09:15
180-81110-5	CCR-LF-2	Water	08/20/18 17:30	08/22/18 09:15
180-81110-6	CCR-LF-3	Water	08/20/18 14:30	08/22/18 09:15
180-81110-7	CCR-LF-4	Water	08/21/18 16:45	08/22/18 09:15
180-81110-8	CCR-LF-5	Water	08/20/18 10:45	08/22/18 09:15
180-81110-9	CCR-LF-6	Water	08/20/18 11:45	08/22/18 09:15
180-81110-10	CCR-BK-2	Water	08/20/18 12:50	08/22/18 09:15
180-81110-11	BLIND DUPLICATE 1	Water	08/21/18 00:00	08/22/18 09:15
180-81110-12	BLIND DUPLICATE 2	Water	08/20/18 00:00	08/22/18 09:15
180-81110-13	FIELD BLANK 1	Water	08/21/18 09:00	08/22/18 09:15

Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6010C	Metals (ICP)	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
EPA 9040C	pH	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
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 PIT
7470A	Preparation, Mercury	SW846	TAL PIT
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 PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-2R

Date Collected: 08/21/18 14:30

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		10			255071	08/27/18 15:57	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		100			255071	08/27/18 16:13	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C Instrument ID: Q		1			255197	08/27/18 13:35	RJG	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			255492	08/29/18 13:37	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 02:16	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:16	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255080	08/27/18 08:32	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	254883	08/23/18 16:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.37 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			390100	09/18/18 15:43	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.37 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:15	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:09	RTM	TAL SL

Client Sample ID: CCR-AP-3R

Date Collected: 08/21/18 10:40

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		10			255071	08/27/18 18:20	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		100			255071	08/27/18 18:36	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C Instrument ID: Q		1			255197	08/27/18 13:40	RJG	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			255492	08/29/18 13:40	RSK	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-3R

Lab Sample ID: 180-81110-2

Date Collected: 08/21/18 10:40

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 02:33	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:17	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255080	08/27/18 08:32	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	254883	08/23/18 16:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			390100	09/18/18 15:44	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:15	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:09	RTM	TAL SL

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-81110-3

Date Collected: 08/21/18 11:45

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		2.5			255165	08/28/18 22:32	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			255584	08/31/18 13:12	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C Instrument ID: Q		1			255197	08/27/18 13:46	RJG	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			255492	08/29/18 13:43	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 02:38	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:18	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255080	08/27/18 08:32	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	254883	08/23/18 16:58	TAM	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-81110-3

Date Collected: 08/21/18 11:45

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			390098	09/18/18 09:37	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:16	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:09	RTM	TAL SL

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-81110-4

Date Collected: 08/21/18 13:00

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		10			255071	08/27/18 18:52	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		100			255071	08/27/18 19:08	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C Instrument ID: Q		1			255197	08/27/18 13:51	RJG	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			255492	08/29/18 13:46	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 02:43	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:19	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255080	08/27/18 08:32	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	254883	08/23/18 16:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.40 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			390098	09/18/18 09:37	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.40 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:16	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:09	RTM	TAL SL

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-81110-5

Date Collected: 08/20/18 17:30

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		50			255071	08/27/18 17:17	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total/NA	Analysis	EPA 9056A		500			255071	08/27/18 17:33	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 13:57	RJG	TAL PIT
		Instrument ID: Q								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			255492	08/29/18 14:20	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		10			255669	08/31/18 02:47	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255399	08/29/18 13:20	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255080	08/27/18 08:32	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	5 mL	100 mL	254820	08/23/18 12:13	TAM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315		1			390098	09/18/18 09:38	CDR	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320		1			386177	08/30/18 16:16	KLS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Analysis	Ra226_Ra228		1			390320	09/19/18 15:09	RTM	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-81110-6

Date Collected: 08/20/18 14:30

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			255071	08/27/18 19:24	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total/NA	Analysis	EPA 9056A		50			255071	08/27/18 19:40	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 15:01	RJG	TAL PIT
		Instrument ID: Q								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255492	08/29/18 14:35	RSK	TAL PIT
		Instrument ID: A								

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-81110-6

Date Collected: 08/20/18 14:30

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 03:10	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:23	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255207	08/28/18 08:40	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	50 mL	100 mL	254820	08/23/18 12:13	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			390098	09/18/18 09:38	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:16	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:09	RTM	TAL SL

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-81110-7

Date Collected: 08/21/18 16:45

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		25			255165	08/28/18 15:38	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		250			255165	08/28/18 15:54	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C Instrument ID: Q		1			255197	08/27/18 15:06	RJG	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			255492	08/29/18 14:38	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 03:15	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:24	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255080	08/27/18 08:32	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	10 mL	100 mL	255006	08/24/18 16:30	TAM	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-81110-7

Date Collected: 08/21/18 16:45

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			390098	09/18/18 09:38	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:16	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:09	RTM	TAL SL

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-81110-8

Date Collected: 08/20/18 10:45

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		10			255165	08/28/18 16:10	MJH	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		100			255165	08/28/18 16:26	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C Instrument ID: Q		1			255197	08/27/18 15:12	RJG	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			255492	08/29/18 14:41	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			255669	08/31/18 03:33	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255399	08/29/18 13:25	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255080	08/27/18 08:32	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	25 mL	100 mL	254820	08/23/18 12:13	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.30 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1	1.0 mL	1.0 mL	390098	09/18/18 09:39	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.30 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			386177	08/30/18 16:16	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			390320	09/19/18 15:11	RTM	TAL SL

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-81110-9

Date Collected: 08/20/18 11:45

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			256321	09/10/18 16:17	MJH	TAL PIT
	Instrument ID: CHICS2000									
Total/NA	Analysis	EPA 9056A		25			256321	09/10/18 16:33	MJH	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 15:17	RJG	TAL PIT
	Instrument ID: Q									
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255492	08/29/18 14:43	RSK	TAL PIT
	Instrument ID: A									
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255669	08/31/18 03:37	WTR	TAL PIT
	Instrument ID: M									
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255399	08/29/18 13:28	RJR	TAL PIT
	Instrument ID: HGZ									
Total/NA	Analysis	EPA 9040C		1			255080	08/27/18 08:32	AVS	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	254820	08/23/18 12:13	TAM	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			999.94 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315		1			390101	09/18/18 09:32	CDR	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Prep	PrecSep_0			999.94 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320		1			386177	08/30/18 16:17	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			390320	09/19/18 15:11	RTM	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-81110-10

Date Collected: 08/20/18 12:50

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			256321	09/10/18 16:49	MJH	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 15:23	RJG	TAL PIT
	Instrument ID: Q									
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255492	08/29/18 14:46	RSK	TAL PIT
	Instrument ID: A									
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-81110-10

Date Collected: 08/20/18 12:50

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	EPA 6020A		1			255669	08/31/18 03:42	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255399	08/29/18 13:29	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255080	08/27/18 08:32	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	254820	08/23/18 12:13	TAM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.23 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315		1			390101	09/18/18 09:32	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Prep	PrecSep_0			1000.23 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320		1			386177	08/30/18 16:17	KLS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Analysis	Ra226_Ra228		1			390320	09/19/18 15:11	RTM	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-81110-11

Date Collected: 08/21/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		10			256321	09/10/18 17:21	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total/NA	Analysis	EPA 9056A		100			256321	09/10/18 17:37	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 15:28	RJG	TAL PIT
		Instrument ID: Q								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255492	08/29/18 14:55	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255669	08/31/18 03:46	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255399	08/29/18 13:30	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255080	08/27/18 08:32	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	254883	08/23/18 16:58	TAM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			999.99 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-81110-11

Date Collected: 08/21/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			390101	09/18/18 09:33	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Prep	PrecSep_0			999.99 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320		1			386177	08/30/18 16:17	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			390320	09/19/18 15:11	RTM	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-81110-12

Date Collected: 08/20/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			256321	09/10/18 17:53	MJH	TAL PIT
Instrument ID: CHICS2000										
Total/NA	Analysis	EPA 9056A		50			256321	09/10/18 18:09	MJH	TAL PIT
Instrument ID: CHICS2000										
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 15:33	RJG	TAL PIT
Instrument ID: Q										
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255492	08/29/18 14:58	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255669	08/31/18 03:51	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255399	08/29/18 13:31	RJR	TAL PIT
Instrument ID: HGZ										
Total/NA	Analysis	EPA 9040C		1			255080	08/27/18 08:32	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	254820	08/23/18 12:13	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.38 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315		1			390101	09/18/18 09:33	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Prep	PrecSep_0			1000.38 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320		1			386177	08/30/18 16:17	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			390320	09/19/18 15:11	RTM	TAL SL
Instrument ID: NOEQUIP										

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-81110-13

Date Collected: 08/21/18 09:00

Matrix: Water

Date Received: 08/22/18 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			255071	08/27/18 16:29	MJH	TAL PIT
		Instrument ID: CHICS2000								
Total Recoverable	Prep	3005A			50 mL	50 mL	254966	08/24/18 12:29	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6010C		1			255197	08/27/18 15:39	RJG	TAL PIT
		Instrument ID: Q								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255492	08/29/18 15:01	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	254968	08/24/18 12:30	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			255669	08/31/18 03:56	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	254909	08/24/18 06:44	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255399	08/29/18 13:31	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255080	08/27/18 08:32	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	254883	08/23/18 16:58	TAM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.17 mL	1.0 g	385342	08/27/18 08:54	JLC	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	390101	09/18/18 09:33	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Prep	PrecSep_0			1000.17 mL	1.0 g	385353	08/27/18 09:39	JLC	TAL SL
Total/NA	Analysis	9320		1			386177	08/30/18 16:17	KLS	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Analysis	Ra226_Ra228		1			390320	09/19/18 15:11	RTM	TAL SL
		Instrument ID: NOEQUIP								

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Analyst References:

Lab: TAL PIT

Batch Type: Prep

NAM = Nicole Marfisi

RJR = Ron Rosenbaum

Batch Type: Analysis

AVS = Abbey Smith

CMR = Carl Reagle

MJH = Matthew Hartman

RJG = Rob Good

RJR = Ron Rosenbaum

RSK = Robert Kurtz

TAM = Tessa Mastalski

WTR = Bill Reinheimer

Lab: TAL SL

Batch Type: Prep

JLC = Jessica Chapman

Batch Type: Analysis

CDR = Conrad Reuscher

KLS = Kody Saulters

RTM = Rachel Mueller

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Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-2R

Lab Sample ID: 180-81110-1

Date Collected: 08/21/18 14:30

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	510		10	7.1	mg/L			08/27/18 15:57	10
Fluoride	0.39	J	1.0	0.26	mg/L			08/27/18 15:57	10
Sulfate	2500		100	38	mg/L			08/27/18 16:13	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.053		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 13:35	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00066	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 13:37	1
Boron	12		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 02:16	1
Barium	0.047		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 13:37	1
Calcium	290		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 13:37	1
Cadmium	0.00040	J	0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 13:37	1
Cobalt	0.0021	B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 13:37	1
Chromium	0.0014	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 13:37	1
Molybdenum	1.7		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 13:37	1
Lead	0.00015	J	0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 13:37	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 13:37	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5200		40	40	mg/L			08/23/18 16:58	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.434		0.119	0.125	1.00	0.0763	pCi/L	08/27/18 08:54	09/18/18 15:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					08/27/18 08:54	09/18/18 15:43	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.309	U	0.213	0.215	1.00	0.329	pCi/L	08/27/18 09:39	08/30/18 16:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					08/27/18 09:39	08/30/18 16:15	1
Y Carrier	88.6		40 - 110					08/27/18 09:39	08/30/18 16:15	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-2R

Date Collected: 08/21/18 14:30

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-1

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.742		0.244	0.249	5.00	0.329	pCi/L		09/19/18 15:09	1

Client Sample ID: CCR-AP-3R

Date Collected: 08/21/18 10:40

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-2

Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	700		10	7.1	mg/L			08/27/18 18:20	10
Fluoride	1.3		1.0	0.26	mg/L			08/27/18 18:20	10
Sulfate	3600		100	38	mg/L			08/27/18 18:36	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.087		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 13:40	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00046	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 13:40	1
Boron	12		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 02:33	1
Barium	0.013		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 13:40	1
Calcium	260		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 13:40	1
Cadmium	0.00022	J	0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 13:40	1
Cobalt	0.00019	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 13:40	1
Chromium	0.0015	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 13:40	1
Molybdenum	1.0		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 13:40	1
Lead	0.00015	J	0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 13:40	1
Selenium	0.019		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 13:40	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	7100		100	100	mg/L			08/23/18 16:58	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.339		0.111	0.115	1.00	0.103	pCi/L	08/27/18 08:54	09/18/18 15:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					08/27/18 08:54	09/18/18 15:44	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-3R

Date Collected: 08/21/18 10:40

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-2

Matrix: Water

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.400		0.229	0.232	1.00	0.344	pCi/L	08/27/18 09:39	08/30/18 16:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					08/27/18 09:39	08/30/18 16:15	1
Y Carrier	89.0		40 - 110					08/27/18 09:39	08/30/18 16:15	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.738		0.254	0.259	5.00	0.344	pCi/L		09/19/18 15:09	1

Client Sample ID: CCR-AP-4R

Date Collected: 08/21/18 11:45

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-3

Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	33		2.5	1.8	mg/L			08/28/18 22:32	2.5
Fluoride	0.34		0.10	0.026	mg/L			08/31/18 13:12	1
Sulfate	100		2.5	0.95	mg/L			08/28/18 22:32	2.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 13:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00034	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 13:43	1
Boron	0.077	J	0.080	0.030	mg/L		08/24/18 12:30	08/31/18 02:38	1
Barium	0.094		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 13:43	1
Calcium	160		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 13:43	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 13:43	1
Cobalt	0.00013	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 13:43	1
Chromium	0.0038	B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 13:43	1
Molybdenum	0.0015	J	0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 13:43	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 13:43	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 13:43	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	960		10	10	mg/L			08/23/18 16:58	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU			08/27/18 08:32	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-4R

Lab Sample ID: 180-81110-3

Date Collected: 08/21/18 11:45

Matrix: Water

Date Received: 08/22/18 09:15

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.329		0.0925	0.0971	1.00	0.0646	pCi/L	08/27/18 08:54	09/18/18 09:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					08/27/18 08:54	09/18/18 09:37	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.414	U	0.282	0.284	1.00	0.442	pCi/L	08/27/18 09:39	08/30/18 16:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					08/27/18 09:39	08/30/18 16:16	1
Y Carrier	90.1		40 - 110					08/27/18 09:39	08/30/18 16:16	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.743		0.297	0.300	5.00	0.442	pCi/L		09/19/18 15:09	1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-81110-4

Date Collected: 08/21/18 13:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	280		10	7.1	mg/L			08/27/18 18:52	10
Fluoride	0.26	J	1.0	0.26	mg/L			08/27/18 18:52	10
Sulfate	2400		100	38	mg/L			08/27/18 19:08	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.023	J	0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 13:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00044	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 13:46	1
Boron	11		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 02:43	1
Barium	0.015		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 13:46	1
Calcium	290		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 13:46	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 13:46	1
Cobalt	0.00017	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 13:46	1
Chromium	0.0016	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 13:46	1
Molybdenum	0.052		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 13:46	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 13:46	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 13:46	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-AP-5

Lab Sample ID: 180-81110-4

Date Collected: 08/21/18 13:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L	-	08/24/18 06:44	08/29/18 13:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4500		40	40	mg/L	-		08/23/18 16:58	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU	-		08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.181		0.0754	0.0772	1.00	0.0694	pCi/L	08/27/18 08:54	09/18/18 09:37	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	08/27/18 08:54	09/18/18 09:37	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.371		0.219	0.222	1.00	0.331	pCi/L	08/27/18 09:39	08/30/18 16:16	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110	08/27/18 09:39	08/30/18 16:16	1
Y Carrier	89.0		40 - 110	08/27/18 09:39	08/30/18 16:16	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.552		0.232	0.235	5.00	0.331	pCi/L		09/19/18 15:09	1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-81110-5

Date Collected: 08/20/18 17:30

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	290		50	36	mg/L	-		08/27/18 17:17	50
Fluoride	ND		5.0	1.3	mg/L	-		08/27/18 17:17	50
Sulfate	15000		500	190	mg/L	-		08/27/18 17:33	500

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.041	J	0.050	0.0086	mg/L	-	08/24/18 12:29	08/27/18 13:57	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0032	mg/L	-	08/24/18 12:30	08/29/18 14:20	10
Boron	5.3		0.80	0.30	mg/L	-	08/24/18 12:30	08/31/18 02:47	10

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-2

Lab Sample ID: 180-81110-5

Date Collected: 08/20/18 17:30

Matrix: Water

Date Received: 08/22/18 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.012	J F1	0.10	0.0037	mg/L		08/24/18 12:30	08/29/18 14:20	10
Calcium	390		5.0	1.2	mg/L		08/24/18 12:30	08/29/18 14:20	10
Cadmium	0.0035	J	0.010	0.0013	mg/L		08/24/18 12:30	08/29/18 14:20	10
Cobalt	0.011	B	0.0050	0.00075	mg/L		08/24/18 12:30	08/29/18 14:20	10
Chromium	ND		0.020	0.0063	mg/L		08/24/18 12:30	08/29/18 14:20	10
Molybdenum	ND		0.050	0.0047	mg/L		08/24/18 12:30	08/29/18 14:20	10
Lead	ND		0.010	0.00094	mg/L		08/24/18 12:30	08/29/18 14:20	10
Selenium	ND	F1	0.050	0.0081	mg/L		08/24/18 12:30	08/29/18 14:20	10

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	24000		200	200	mg/L			08/23/18 12:13	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.466		0.106	0.114	1.00	0.0573	pCi/L	08/27/18 08:54	09/18/18 09:38	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	103		40 - 110					08/27/18 08:54	09/18/18 09:38	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.86		0.344	0.384	1.00	0.371	pCi/L	08/27/18 09:39	08/30/18 16:16	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	103		40 - 110					08/27/18 09:39	08/30/18 16:16	1
<i>Y Carrier</i>	88.2		40 - 110					08/27/18 09:39	08/30/18 16:16	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.32		0.360	0.401	5.00	0.371	pCi/L		09/19/18 15:09	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-3

Lab Sample ID: 180-81110-6

Date Collected: 08/20/18 14:30

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	31		5.0	3.6	mg/L			08/27/18 19:24	5
Fluoride	0.19	J	0.50	0.13	mg/L			08/27/18 19:24	5
Sulfate	1500		50	19	mg/L			08/27/18 19:40	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.0098	J	0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:01	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00065	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:35	1
Boron	ND		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:10	1
Barium	0.025		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:35	1
Calcium	290		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:35	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:35	1
Cobalt	0.00025	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:35	1
Chromium	0.0035	B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:35	1
Molybdenum	0.0011	J	0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:35	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:35	1
Selenium	0.0014	J	0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:35	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2900		20	20	mg/L			08/23/18 12:13	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU			08/28/18 08:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.197		0.0764	0.0784	1.00	0.0628	pCi/L	08/27/18 08:54	09/18/18 09:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					08/27/18 08:54	09/18/18 09:38	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.235	U	0.231	0.232	1.00	0.374	pCi/L	08/27/18 09:39	08/30/18 16:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					08/27/18 09:39	08/30/18 16:16	1
Y Carrier	82.6		40 - 110					08/27/18 09:39	08/30/18 16:16	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-3

Date Collected: 08/20/18 14:30

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-6

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.432		0.243	0.245	5.00	0.374	pCi/L		09/19/18 15:09	1

Client Sample ID: CCR-LF-4

Date Collected: 08/21/18 16:45

Date Received: 08/22/18 09:15

Lab Sample ID: 180-81110-7

Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	600		25	18	mg/L			08/28/18 15:38	25
Fluoride	ND		2.5	0.66	mg/L			08/28/18 15:38	25
Sulfate	5600		250	95	mg/L			08/28/18 15:54	250

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.096		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:06	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.016		0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:38	1
Boron	0.20		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:15	1
Barium	0.011		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:38	1
Calcium	360		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:38	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:38	1
Cobalt	0.0010	B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:38	1
Chromium	0.0016	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:38	1
Molybdenum	0.021		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:38	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:38	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:38	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	12000		100	100	mg/L			08/24/18 16:30	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.10		0.275	0.392	1.00	0.0734	pCi/L	08/27/18 08:54	09/18/18 09:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					08/27/18 08:54	09/18/18 09:38	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-4

Lab Sample ID: 180-81110-7

Date Collected: 08/21/18 16:45

Matrix: Water

Date Received: 08/22/18 09:15

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.28		0.301	0.323	1.00	0.362	pCi/L	08/27/18 09:39	08/30/18 16:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					08/27/18 09:39	08/30/18 16:16	1
Y Carrier	89.3		40 - 110					08/27/18 09:39	08/30/18 16:16	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	4.38		0.408	0.508	5.00	0.362	pCi/L		09/19/18 15:09	1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-81110-8

Date Collected: 08/20/18 10:45

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	34		10	7.1	mg/L			08/28/18 16:10	10
Fluoride	ND		1.0	0.26	mg/L			08/28/18 16:10	10
Sulfate	3000		100	38	mg/L			08/28/18 16:26	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.031	J	0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:12	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00063	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:41	1
Boron	0.93		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:33	1
Barium	0.024		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:41	1
Calcium	410		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:41	1
Cadmium	0.00022	J	0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:41	1
Cobalt	0.00023	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:41	1
Chromium	0.0019	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:41	1
Molybdenum	0.00063	J	0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:41	1
Lead	0.00011	J	0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:41	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:41	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000081	J	0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4400		40	40	mg/L			08/23/18 12:13	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			08/27/18 08:32	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-5

Lab Sample ID: 180-81110-8

Date Collected: 08/20/18 10:45

Matrix: Water

Date Received: 08/22/18 09:15

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.205		0.0837	0.0857	1.00	0.0894	pCi/L	08/27/18 08:54	09/18/18 09:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					08/27/18 08:54	09/18/18 09:39	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.260	U	0.299	0.300	1.00	0.492	pCi/L	08/27/18 09:39	08/30/18 16:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					08/27/18 09:39	08/30/18 16:16	1
Y Carrier	82.6		40 - 110					08/27/18 09:39	08/30/18 16:16	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.465	U	0.310	0.312	5.00	0.492	pCi/L		09/19/18 15:11	1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-81110-9

Date Collected: 08/20/18 11:45

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21		2.5	1.8	mg/L			09/10/18 16:17	2.5
Fluoride	0.47		0.25	0.066	mg/L			09/10/18 16:17	2.5
Sulfate	520		25	9.5	mg/L			09/10/18 16:33	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.021	J	0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00075	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:43	1
Boron	0.79		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:37	1
Barium	0.030		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:43	1
Calcium	190		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:43	1
Cadmium	0.00021	J	0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:43	1
Cobalt	0.00086	B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:43	1
Chromium	0.0023	B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:43	1
Molybdenum	0.0015	J	0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:43	1
Lead	0.00017	J	0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:43	1
Selenium	0.0020	J	0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:43	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-LF-6

Lab Sample ID: 180-81110-9

Date Collected: 08/20/18 11:45

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1200		10	10	mg/L			08/23/18 12:13	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.295		0.0962	0.0998	1.00	0.0876	pCi/L	08/27/18 08:54	09/18/18 09:32	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	08/27/18 08:54	09/18/18 09:32	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.320	U	0.267	0.269	1.00	0.428	pCi/L	08/27/18 09:39	08/30/18 16:17	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	08/27/18 09:39	08/30/18 16:17	1
Y Carrier	89.0		40 - 110	08/27/18 09:39	08/30/18 16:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.615		0.284	0.287	5.00	0.428	pCi/L		09/19/18 15:11	1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-81110-10

Date Collected: 08/20/18 12:50

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15		1.0	0.71	mg/L			09/10/18 16:49	1
Fluoride	0.13		0.10	0.026	mg/L			09/10/18 16:49	1
Sulfate	18		1.0	0.38	mg/L			09/10/18 16:49	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00043	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:46	1
Boron	ND		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:42	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: CCR-BK-2

Lab Sample ID: 180-81110-10

Date Collected: 08/20/18 12:50

Matrix: Water

Date Received: 08/22/18 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.033		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:46	1
Calcium	36		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:46	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:46	1
Cobalt	0.000092	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:46	1
Chromium	0.0018	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:46	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:46	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:46	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:46	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	230		10	10	mg/L			08/23/18 12:13	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.171		0.0779	0.0794	1.00	0.0883	pCi/L	08/27/18 08:54	09/18/18 09:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	<i>104</i>		<i>40 - 110</i>					<i>08/27/18 08:54</i>	<i>09/18/18 09:32</i>	<i>1</i>

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0380	U	0.238	0.238	1.00	0.416	pCi/L	08/27/18 09:39	08/30/18 16:17	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	<i>104</i>		<i>40 - 110</i>					<i>08/27/18 09:39</i>	<i>08/30/18 16:17</i>	<i>1</i>
<i>Y Carrier</i>	<i>86.7</i>		<i>40 - 110</i>					<i>08/27/18 09:39</i>	<i>08/30/18 16:17</i>	<i>1</i>

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.209	U	0.250	0.251	5.00	0.416	pCi/L		09/19/18 15:11	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-81110-11

Date Collected: 08/21/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	700		10	7.1	mg/L			09/10/18 17:21	10
Fluoride	1.6		1.0	0.26	mg/L			09/10/18 17:21	10
Sulfate	3500		100	38	mg/L			09/10/18 17:37	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.082		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:28	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00054	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:55	1
Boron	12		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:46	1
Barium	0.013		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:55	1
Calcium	260		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:55	1
Cadmium	0.00020	J	0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:55	1
Cobalt	0.00017	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:55	1
Chromium	0.0017	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:55	1
Molybdenum	0.98		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:55	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:55	1
Selenium	0.019		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:55	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	7000		100	100	mg/L			08/23/18 16:58	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.275		0.0940	0.0973	1.00	0.0902	pCi/L	08/27/18 08:54	09/18/18 09:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110					08/27/18 08:54	09/18/18 09:33	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.364	U	0.236	0.238	1.00	0.365	pCi/L	08/27/18 09:39	08/30/18 16:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110					08/27/18 09:39	08/30/18 16:17	1
Y Carrier	89.3		40 - 110					08/27/18 09:39	08/30/18 16:17	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: BLIND DUPLICATE 1

Lab Sample ID: 180-81110-11

Date Collected: 08/21/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.639		0.254	0.257	5.00	0.365	pCi/L		09/19/18 15:11	1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-81110-12

Date Collected: 08/20/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	32		5.0	3.6	mg/L			09/10/18 17:53	5
Fluoride	0.20	J	0.50	0.13	mg/L			09/10/18 17:53	5
Sulfate	1500		50	19	mg/L			09/10/18 18:09	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:33	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00056	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 14:58	1
Boron	0.063	J	0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:51	1
Barium	0.025		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 14:58	1
Calcium	280		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 14:58	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 14:58	1
Cobalt	0.00024	J B	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 14:58	1
Chromium	0.0032	B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 14:58	1
Molybdenum	0.0012	J	0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 14:58	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 14:58	1
Selenium	0.0011	J	0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 14:58	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2800		20	20	mg/L			08/23/18 12:13	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			08/27/18 08:32	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.305		0.105	0.108	1.00	0.101	pCi/L	08/27/18 08:54	09/18/18 09:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110					08/27/18 08:54	09/18/18 09:33	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: BLIND DUPLICATE 2

Lab Sample ID: 180-81110-12

Date Collected: 08/20/18 00:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.404	U	0.266	0.268	1.00	0.412	pCi/L	08/27/18 09:39	08/30/18 16:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110					08/27/18 09:39	08/30/18 16:17	1
Y Carrier	89.7		40 - 110					08/27/18 09:39	08/30/18 16:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.710		0.286	0.289	5.00	0.412	pCi/L		09/19/18 15:11	1

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-81110-13

Date Collected: 08/21/18 09:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			08/27/18 16:29	1
Fluoride	0.030	J	0.10	0.026	mg/L			08/27/18 16:29	1
Sulfate	ND		1.0	0.38	mg/L			08/27/18 16:29	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 15:39	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00033	J	0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 15:01	1
Boron	ND		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 03:56	1
Barium	ND		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 15:01	1
Calcium	ND		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 15:01	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 15:01	1
Cobalt	ND		0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 15:01	1
Chromium	0.0016	J B	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 15:01	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 15:01	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 15:01	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 15:01	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			08/23/18 16:58	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.2	HF	0.1	0.1	SU			08/27/18 08:32	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Client Sample ID: FIELD BLANK 1

Lab Sample ID: 180-81110-13

Date Collected: 08/21/18 09:00

Matrix: Water

Date Received: 08/22/18 09:15

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.245		0.0849	0.0877	1.00	0.0705	pCi/L	08/27/18 08:54	09/18/18 09:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					08/27/18 08:54	09/18/18 09:33	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0669	U	0.198	0.198	1.00	0.364	pCi/L	08/27/18 09:39	08/30/18 16:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110					08/27/18 09:39	08/30/18 16:17	1
Y Carrier	89.7		40 - 110					08/27/18 09:39	08/30/18 16:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.178	U	0.215	0.217	5.00	0.364	pCi/L		09/19/18 15:11	1

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-255071/6
Matrix: Water
Analysis Batch: 255071

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			08/27/18 09:44	1
Fluoride	ND		0.10	0.026	mg/L			08/27/18 09:44	1
Sulfate	ND		1.0	0.38	mg/L			08/27/18 09:44	1

Lab Sample ID: LCS 180-255071/5
Matrix: Water
Analysis Batch: 255071

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	22.2		mg/L		89	80 - 120
Fluoride	1.25	1.20		mg/L		96	80 - 120
Sulfate	25.0	22.3		mg/L		89	80 - 120

Lab Sample ID: 180-81110-5 MS
Matrix: Water
Analysis Batch: 255071

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	ND		12500	11300		mg/L		90	80 - 120
Fluoride	ND		625	642		mg/L		103	80 - 120
Sulfate	15000		12500	28200		mg/L		107	80 - 120

Lab Sample ID: 180-81110-5 MSD
Matrix: Water
Analysis Batch: 255071

Client Sample ID: CCR-LF-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	ND		12500	11400		mg/L		91	80 - 120	1	15
Fluoride	ND		625	651		mg/L		104	80 - 120	1	15
Sulfate	15000		12500	28200		mg/L		106	80 - 120	0	15

Lab Sample ID: MB 180-255165/6
Matrix: Water
Analysis Batch: 255165

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			08/28/18 06:03	1
Fluoride	ND		0.10	0.026	mg/L			08/28/18 06:03	1
Sulfate	ND		1.0	0.38	mg/L			08/28/18 06:03	1

Lab Sample ID: LCS 180-255165/5
Matrix: Water
Analysis Batch: 255165

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	22.7		mg/L		91	80 - 120
Fluoride	1.25	1.25		mg/L		100	80 - 120
Sulfate	25.0	23.0		mg/L		92	80 - 120

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

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

Lab Sample ID: MB 180-255584/6
Matrix: Water
Analysis Batch: 255584

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.10	0.026	mg/L			08/31/18 06:35	1

Lab Sample ID: LCS 180-255584/5
Matrix: Water
Analysis Batch: 255584

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	1.25	1.18		mg/L		95	80 - 120

Lab Sample ID: MB 180-256321/16
Matrix: Water
Analysis Batch: 256321

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			09/10/18 12:34	1
Fluoride	ND		0.10	0.026	mg/L			09/10/18 12:34	1
Sulfate	ND		1.0	0.38	mg/L			09/10/18 12:34	1

Lab Sample ID: LCS 180-256321/15
Matrix: Water
Analysis Batch: 256321

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	22.3		mg/L		89	80 - 120
Fluoride	1.25	1.20		mg/L		96	80 - 120
Sulfate	25.0	21.6		mg/L		86	80 - 120

Method: EPA 6010C - Metals (ICP)

Lab Sample ID: MB 180-254966/1-A
Matrix: Water
Analysis Batch: 255197

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 254966

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		0.050	0.0086	mg/L		08/24/18 12:29	08/27/18 13:24	1

Lab Sample ID: LCS 180-254966/2-A
Matrix: Water
Analysis Batch: 255197

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 254966

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

Lab Sample ID: 180-81110-5 MS
Matrix: Water
Analysis Batch: 255197

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 254966

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.041	J	1.00	1.19		mg/L		115	75 - 125

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Method: EPA 6010C - Metals (ICP) (Continued)

Lab Sample ID: 180-81110-5 MSD
Matrix: Water
Analysis Batch: 255197

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 254966

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Lithium	0.041	J	1.00	1.18		mg/L		114	75 - 125	1	20

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

Lab Sample ID: MB 180-254968/1-A
Matrix: Water
Analysis Batch: 255492

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		08/24/18 12:30	08/29/18 13:23	1
Boron	ND		0.080	0.030	mg/L		08/24/18 12:30	08/29/18 13:23	1
Barium	ND		0.010	0.00037	mg/L		08/24/18 12:30	08/29/18 13:23	1
Calcium	ND		0.50	0.12	mg/L		08/24/18 12:30	08/29/18 13:23	1
Cadmium	ND		0.0010	0.00013	mg/L		08/24/18 12:30	08/29/18 13:23	1
Cobalt	0.0000930	J	0.00050	0.000075	mg/L		08/24/18 12:30	08/29/18 13:23	1
Chromium	0.00153	J	0.0020	0.00063	mg/L		08/24/18 12:30	08/29/18 13:23	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/24/18 12:30	08/29/18 13:23	1
Lead	ND		0.0010	0.000094	mg/L		08/24/18 12:30	08/29/18 13:23	1
Selenium	ND		0.0050	0.00081	mg/L		08/24/18 12:30	08/29/18 13:23	1

Lab Sample ID: MB 180-254968/1-A
Matrix: Water
Analysis Batch: 255669

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.080	0.030	mg/L		08/24/18 12:30	08/31/18 02:07	1

Lab Sample ID: LCS 180-254968/2-A
Matrix: Water
Analysis Batch: 255492

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.0400	0.0391		mg/L		98	80 - 120
Boron	1.00	0.930		mg/L		93	80 - 120
Barium	2.00	1.99		mg/L		99	80 - 120
Calcium	50.0	49.2		mg/L		98	80 - 120
Cadmium	0.0500	0.0528		mg/L		106	80 - 120
Cobalt	0.500	0.492		mg/L		98	80 - 120
Chromium	0.200	0.211		mg/L		105	80 - 120
Molybdenum	1.00	0.999		mg/L		100	80 - 120
Lead	0.0200	0.0206		mg/L		103	80 - 120
Selenium	0.0100	0.00935		mg/L		94	80 - 120

Lab Sample ID: LCS 180-254968/2-A
Matrix: Water
Analysis Batch: 255669

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.00	0.992		mg/L		99	80 - 120

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Lab Sample ID: 180-81110-5 MS
Matrix: Water
Analysis Batch: 255492

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		0.0400	0.0411		mg/L		103	75 - 125
Barium	0.012	J F1	2.00	0.397	F1	mg/L		19	75 - 125
Calcium	390		50.0	457	4	mg/L		131	75 - 125
Cadmium	0.0035	J	0.0500	0.0546		mg/L		102	75 - 125
Cobalt	0.011	B	0.500	0.516		mg/L		101	75 - 125
Chromium	ND		0.200	0.206		mg/L		103	75 - 125
Molybdenum	ND		1.00	1.03		mg/L		103	75 - 125
Lead	ND		0.0200	0.0158		mg/L		79	75 - 125
Selenium	ND	F1	0.0100	0.0115	J	mg/L		115	75 - 125

Lab Sample ID: 180-81110-5 MS
Matrix: Water
Analysis Batch: 255669

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	5.3		1.00	6.28	4	mg/L		102	75 - 125

Lab Sample ID: 180-81110-5 MSD
Matrix: Water
Analysis Batch: 255492

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	ND		0.0400	0.0412		mg/L		103	75 - 125	0	20
Barium	0.012	J F1	2.00	0.436	F1	mg/L		21	75 - 125	9	20
Calcium	390		50.0	432	4	mg/L		81	75 - 125	6	20
Cadmium	0.0035	J	0.0500	0.0536		mg/L		100	75 - 125	2	20
Cobalt	0.011	B	0.500	0.506		mg/L		99	75 - 125	2	20
Chromium	ND		0.200	0.200		mg/L		100	75 - 125	3	20
Molybdenum	ND		1.00	0.999		mg/L		100	75 - 125	3	20
Lead	ND		0.0200	0.0165		mg/L		82	75 - 125	4	20
Selenium	ND	F1	0.0100	0.0133	J F1	mg/L		133	75 - 125	15	20

Lab Sample ID: 180-81110-5 MSD
Matrix: Water
Analysis Batch: 255669

Client Sample ID: CCR-LF-2
Prep Type: Total Recoverable
Prep Batch: 254968

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	5.3		1.00	5.98	4	mg/L		72	75 - 125	5	20

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-254909/1-A
Matrix: Water
Analysis Batch: 255399

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 254909

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/24/18 06:44	08/29/18 13:12	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Method: EPA 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 180-254909/2-A
Matrix: Water
Analysis Batch: 255399

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 254909

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00250	0.00227		mg/L		91	80 - 120

Lab Sample ID: 180-81110-5 MS
Matrix: Water
Analysis Batch: 255399

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 254909

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.00100	0.000883		mg/L		88	75 - 125

Lab Sample ID: 180-81110-5 MSD
Matrix: Water
Analysis Batch: 255399

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 254909

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00100	0.000934		mg/L		93	75 - 125	6	20

Method: EPA 9040C - pH

Lab Sample ID: LCS 180-255080/1
Matrix: Water
Analysis Batch: 255080

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
pH	7.00	7.0		SU		100	99 - 101

Lab Sample ID: 180-81110-3 DU
Matrix: Water
Analysis Batch: 255080

Client Sample ID: CCR-AP-4R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH	7.2	HF	7.1		SU		0.6	2

Lab Sample ID: 180-81110-5 DU
Matrix: Water
Analysis Batch: 255080

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH	6.6	HF	6.6	HF	SU		0.6	2

Lab Sample ID: LCS 180-255207/1
Matrix: Water
Analysis Batch: 255207

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
pH	7.00	7.0		SU		100	99 - 101

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

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

Lab Sample ID: MB 180-254820/2
Matrix: Water
Analysis Batch: 254820

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	ND		10	10	mg/L			08/23/18 12:13	1

Lab Sample ID: LCS 180-254820/1
Matrix: Water
Analysis Batch: 254820

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	744	752		mg/L		101	80 - 120

Lab Sample ID: 180-81110-5 DU
Matrix: Water
Analysis Batch: 254820

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	24000		25500		mg/L		5	10

Lab Sample ID: 180-81110-10 DU
Matrix: Water
Analysis Batch: 254820

Client Sample ID: CCR-BK-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	230		234		mg/L		0	10

Lab Sample ID: MB 180-254883/2
Matrix: Water
Analysis Batch: 254883

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	ND		10	10	mg/L			08/23/18 16:58	1

Lab Sample ID: LCS 180-254883/1
Matrix: Water
Analysis Batch: 254883

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	494	476		mg/L		96	80 - 120

Lab Sample ID: MB 180-255006/2
Matrix: Water
Analysis Batch: 255006

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	ND		10	10	mg/L			08/24/18 16:30	1

Lab Sample ID: LCS 180-255006/1
Matrix: Water
Analysis Batch: 255006

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	494	480		mg/L		97	80 - 120

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-385342/22-A
Matrix: Water
Analysis Batch: 390101

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385342

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1772		0.0757	0.0774	1.00	0.0793	pCi/L	08/27/18 08:54	09/18/18 12:31	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					08/27/18 08:54	09/18/18 12:31	1

Lab Sample ID: LCS 160-385342/1-A
Matrix: Water
Analysis Batch: 390098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385342

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	9.629		0.984	1.00	0.0596	pCi/L	85	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	108		40 - 110						

Lab Sample ID: 180-81110-5 DU
Matrix: Water
Analysis Batch: 390098

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 385342

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.466		0.3754		0.108	1.00	0.0617	pCi/L	0.41	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	108		40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-385353/22-A
Matrix: Water
Analysis Batch: 386177

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385353

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.1330	U	0.165	0.165	1.00	0.323	pCi/L	08/27/18 09:39	08/30/18 16:18	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					08/27/18 09:39	08/30/18 16:18	1
Y Carrier	92.3		40 - 110					08/27/18 09:39	08/30/18 16:18	1

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

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

Lab Sample ID: LCS 160-385353/1-A
Matrix: Water
Analysis Batch: 386177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385353

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	11.1	10.77		1.19	1.00	0.339	pCi/L	97	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	108		40 - 110
Y Carrier	89.0		40 - 110

Lab Sample ID: 180-81110-5 DU
Matrix: Water
Analysis Batch: 386177

Client Sample ID: CCR-LF-2
Prep Type: Total/NA
Prep Batch: 385353

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	1.86		1.589		0.350	1.00	0.365	pCi/L	0.36	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	108		40 - 110
Y Carrier	89.7		40 - 110

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

Lab Sample ID: 180-81110-5 DU
Matrix: Water
Analysis Batch: 390320

Client Sample ID: CCR-LF-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Combined Radium 226 + 228	2.32		1.964		0.366	5.00	0.365	pCi/L	0.47	

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

HPLC/IC

Analysis Batch: 255071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	EPA 9056A	
180-81110-1	CCR-AP-2R	Total/NA	Water	EPA 9056A	
180-81110-2	CCR-AP-3R	Total/NA	Water	EPA 9056A	
180-81110-2	CCR-AP-3R	Total/NA	Water	EPA 9056A	
180-81110-4	CCR-AP-5	Total/NA	Water	EPA 9056A	
180-81110-4	CCR-AP-5	Total/NA	Water	EPA 9056A	
180-81110-5	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-81110-5	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-81110-6	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-81110-6	CCR-LF-3	Total/NA	Water	EPA 9056A	
180-81110-13	FIELD BLANK 1	Total/NA	Water	EPA 9056A	
MB 180-255071/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-255071/5	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-81110-5 MS	CCR-LF-2	Total/NA	Water	EPA 9056A	
180-81110-5 MSD	CCR-LF-2	Total/NA	Water	EPA 9056A	

Analysis Batch: 255165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-3	CCR-AP-4R	Total/NA	Water	EPA 9056A	
180-81110-7	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-81110-7	CCR-LF-4	Total/NA	Water	EPA 9056A	
180-81110-8	CCR-LF-5	Total/NA	Water	EPA 9056A	
180-81110-8	CCR-LF-5	Total/NA	Water	EPA 9056A	
MB 180-255165/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-255165/5	Lab Control Sample	Total/NA	Water	EPA 9056A	

Analysis Batch: 255584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-3	CCR-AP-4R	Total/NA	Water	EPA 9056A	
MB 180-255584/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-255584/5	Lab Control Sample	Total/NA	Water	EPA 9056A	

Analysis Batch: 256321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-9	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-81110-9	CCR-LF-6	Total/NA	Water	EPA 9056A	
180-81110-10	CCR-BK-2	Total/NA	Water	EPA 9056A	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	EPA 9056A	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	EPA 9056A	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	EPA 9056A	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	EPA 9056A	
MB 180-256321/16	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-256321/15	Lab Control Sample	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 254909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	7470A	
180-81110-2	CCR-AP-3R	Total/NA	Water	7470A	

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QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Metals (Continued)

Prep Batch: 254909 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-3	CCR-AP-4R	Total/NA	Water	7470A	
180-81110-4	CCR-AP-5	Total/NA	Water	7470A	
180-81110-5	CCR-LF-2	Total/NA	Water	7470A	
180-81110-6	CCR-LF-3	Total/NA	Water	7470A	
180-81110-7	CCR-LF-4	Total/NA	Water	7470A	
180-81110-8	CCR-LF-5	Total/NA	Water	7470A	
180-81110-9	CCR-LF-6	Total/NA	Water	7470A	
180-81110-10	CCR-BK-2	Total/NA	Water	7470A	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	7470A	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	7470A	
180-81110-13	FIELD BLANK 1	Total/NA	Water	7470A	
MB 180-254909/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-254909/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-81110-5 MS	CCR-LF-2	Total/NA	Water	7470A	
180-81110-5 MSD	CCR-LF-2	Total/NA	Water	7470A	

Prep Batch: 254966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total Recoverable	Water	3005A	
180-81110-2	CCR-AP-3R	Total Recoverable	Water	3005A	
180-81110-3	CCR-AP-4R	Total Recoverable	Water	3005A	
180-81110-4	CCR-AP-5	Total Recoverable	Water	3005A	
180-81110-5	CCR-LF-2	Total Recoverable	Water	3005A	
180-81110-6	CCR-LF-3	Total Recoverable	Water	3005A	
180-81110-7	CCR-LF-4	Total Recoverable	Water	3005A	
180-81110-8	CCR-LF-5	Total Recoverable	Water	3005A	
180-81110-9	CCR-LF-6	Total Recoverable	Water	3005A	
180-81110-10	CCR-BK-2	Total Recoverable	Water	3005A	
180-81110-11	BLIND DUPLICATE 1	Total Recoverable	Water	3005A	
180-81110-12	BLIND DUPLICATE 2	Total Recoverable	Water	3005A	
180-81110-13	FIELD BLANK 1	Total Recoverable	Water	3005A	
MB 180-254966/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-254966/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-81110-5 MS	CCR-LF-2	Total Recoverable	Water	3005A	
180-81110-5 MSD	CCR-LF-2	Total Recoverable	Water	3005A	

Prep Batch: 254968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total Recoverable	Water	3005A	
180-81110-2	CCR-AP-3R	Total Recoverable	Water	3005A	
180-81110-3	CCR-AP-4R	Total Recoverable	Water	3005A	
180-81110-4	CCR-AP-5	Total Recoverable	Water	3005A	
180-81110-5	CCR-LF-2	Total Recoverable	Water	3005A	
180-81110-6	CCR-LF-3	Total Recoverable	Water	3005A	
180-81110-7	CCR-LF-4	Total Recoverable	Water	3005A	
180-81110-8	CCR-LF-5	Total Recoverable	Water	3005A	
180-81110-9	CCR-LF-6	Total Recoverable	Water	3005A	
180-81110-10	CCR-BK-2	Total Recoverable	Water	3005A	
180-81110-11	BLIND DUPLICATE 1	Total Recoverable	Water	3005A	
180-81110-12	BLIND DUPLICATE 2	Total Recoverable	Water	3005A	
180-81110-13	FIELD BLANK 1	Total Recoverable	Water	3005A	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Metals (Continued)

Prep Batch: 254968 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-254968/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-254968/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-81110-5 MS	CCR-LF-2	Total Recoverable	Water	3005A	
180-81110-5 MSD	CCR-LF-2	Total Recoverable	Water	3005A	

Analysis Batch: 255197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total Recoverable	Water	EPA 6010C	254966
180-81110-2	CCR-AP-3R	Total Recoverable	Water	EPA 6010C	254966
180-81110-3	CCR-AP-4R	Total Recoverable	Water	EPA 6010C	254966
180-81110-4	CCR-AP-5	Total Recoverable	Water	EPA 6010C	254966
180-81110-5	CCR-LF-2	Total Recoverable	Water	EPA 6010C	254966
180-81110-6	CCR-LF-3	Total Recoverable	Water	EPA 6010C	254966
180-81110-7	CCR-LF-4	Total Recoverable	Water	EPA 6010C	254966
180-81110-8	CCR-LF-5	Total Recoverable	Water	EPA 6010C	254966
180-81110-9	CCR-LF-6	Total Recoverable	Water	EPA 6010C	254966
180-81110-10	CCR-BK-2	Total Recoverable	Water	EPA 6010C	254966
180-81110-11	BLIND DUPLICATE 1	Total Recoverable	Water	EPA 6010C	254966
180-81110-12	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6010C	254966
180-81110-13	FIELD BLANK 1	Total Recoverable	Water	EPA 6010C	254966
MB 180-254966/1-A	Method Blank	Total Recoverable	Water	EPA 6010C	254966
LCS 180-254966/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6010C	254966
180-81110-5 MS	CCR-LF-2	Total Recoverable	Water	EPA 6010C	254966
180-81110-5 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6010C	254966

Analysis Batch: 255399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	EPA 7470A	254909
180-81110-2	CCR-AP-3R	Total/NA	Water	EPA 7470A	254909
180-81110-3	CCR-AP-4R	Total/NA	Water	EPA 7470A	254909
180-81110-4	CCR-AP-5	Total/NA	Water	EPA 7470A	254909
180-81110-5	CCR-LF-2	Total/NA	Water	EPA 7470A	254909
180-81110-6	CCR-LF-3	Total/NA	Water	EPA 7470A	254909
180-81110-7	CCR-LF-4	Total/NA	Water	EPA 7470A	254909
180-81110-8	CCR-LF-5	Total/NA	Water	EPA 7470A	254909
180-81110-9	CCR-LF-6	Total/NA	Water	EPA 7470A	254909
180-81110-10	CCR-BK-2	Total/NA	Water	EPA 7470A	254909
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	EPA 7470A	254909
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	EPA 7470A	254909
180-81110-13	FIELD BLANK 1	Total/NA	Water	EPA 7470A	254909
MB 180-254909/1-A	Method Blank	Total/NA	Water	EPA 7470A	254909
LCS 180-254909/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	254909
180-81110-5 MS	CCR-LF-2	Total/NA	Water	EPA 7470A	254909
180-81110-5 MSD	CCR-LF-2	Total/NA	Water	EPA 7470A	254909

Analysis Batch: 255492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total Recoverable	Water	EPA 6020A	254968
180-81110-2	CCR-AP-3R	Total Recoverable	Water	EPA 6020A	254968
180-81110-3	CCR-AP-4R	Total Recoverable	Water	EPA 6020A	254968
180-81110-4	CCR-AP-5	Total Recoverable	Water	EPA 6020A	254968

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Metals (Continued)

Analysis Batch: 255492 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-5	CCR-LF-2	Total Recoverable	Water	EPA 6020A	254968
180-81110-6	CCR-LF-3	Total Recoverable	Water	EPA 6020A	254968
180-81110-7	CCR-LF-4	Total Recoverable	Water	EPA 6020A	254968
180-81110-8	CCR-LF-5	Total Recoverable	Water	EPA 6020A	254968
180-81110-9	CCR-LF-6	Total Recoverable	Water	EPA 6020A	254968
180-81110-10	CCR-BK-2	Total Recoverable	Water	EPA 6020A	254968
180-81110-11	BLIND DUPLICATE 1	Total Recoverable	Water	EPA 6020A	254968
180-81110-12	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6020A	254968
180-81110-13	FIELD BLANK 1	Total Recoverable	Water	EPA 6020A	254968
MB 180-254968/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	254968
LCS 180-254968/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	254968
180-81110-5 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	254968
180-81110-5 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	254968

Analysis Batch: 255669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total Recoverable	Water	EPA 6020A	254968
180-81110-2	CCR-AP-3R	Total Recoverable	Water	EPA 6020A	254968
180-81110-3	CCR-AP-4R	Total Recoverable	Water	EPA 6020A	254968
180-81110-4	CCR-AP-5	Total Recoverable	Water	EPA 6020A	254968
180-81110-5	CCR-LF-2	Total Recoverable	Water	EPA 6020A	254968
180-81110-6	CCR-LF-3	Total Recoverable	Water	EPA 6020A	254968
180-81110-7	CCR-LF-4	Total Recoverable	Water	EPA 6020A	254968
180-81110-8	CCR-LF-5	Total Recoverable	Water	EPA 6020A	254968
180-81110-9	CCR-LF-6	Total Recoverable	Water	EPA 6020A	254968
180-81110-10	CCR-BK-2	Total Recoverable	Water	EPA 6020A	254968
180-81110-11	BLIND DUPLICATE 1	Total Recoverable	Water	EPA 6020A	254968
180-81110-12	BLIND DUPLICATE 2	Total Recoverable	Water	EPA 6020A	254968
180-81110-13	FIELD BLANK 1	Total Recoverable	Water	EPA 6020A	254968
MB 180-254968/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	254968
LCS 180-254968/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	254968
180-81110-5 MS	CCR-LF-2	Total Recoverable	Water	EPA 6020A	254968
180-81110-5 MSD	CCR-LF-2	Total Recoverable	Water	EPA 6020A	254968

General Chemistry

Analysis Batch: 254820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-5	CCR-LF-2	Total/NA	Water	SM 2540C	
180-81110-6	CCR-LF-3	Total/NA	Water	SM 2540C	
180-81110-8	CCR-LF-5	Total/NA	Water	SM 2540C	
180-81110-9	CCR-LF-6	Total/NA	Water	SM 2540C	
180-81110-10	CCR-BK-2	Total/NA	Water	SM 2540C	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	SM 2540C	
MB 180-254820/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-254820/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-81110-5 DU	CCR-LF-2	Total/NA	Water	SM 2540C	
180-81110-10 DU	CCR-BK-2	Total/NA	Water	SM 2540C	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

General Chemistry (Continued)

Analysis Batch: 254883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	SM 2540C	
180-81110-2	CCR-AP-3R	Total/NA	Water	SM 2540C	
180-81110-3	CCR-AP-4R	Total/NA	Water	SM 2540C	
180-81110-4	CCR-AP-5	Total/NA	Water	SM 2540C	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	SM 2540C	
180-81110-13	FIELD BLANK 1	Total/NA	Water	SM 2540C	
MB 180-254883/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-254883/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 255006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-7	CCR-LF-4	Total/NA	Water	SM 2540C	
MB 180-255006/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-255006/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 255080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	EPA 9040C	
180-81110-2	CCR-AP-3R	Total/NA	Water	EPA 9040C	
180-81110-3	CCR-AP-4R	Total/NA	Water	EPA 9040C	
180-81110-4	CCR-AP-5	Total/NA	Water	EPA 9040C	
180-81110-5	CCR-LF-2	Total/NA	Water	EPA 9040C	
180-81110-7	CCR-LF-4	Total/NA	Water	EPA 9040C	
180-81110-8	CCR-LF-5	Total/NA	Water	EPA 9040C	
180-81110-9	CCR-LF-6	Total/NA	Water	EPA 9040C	
180-81110-10	CCR-BK-2	Total/NA	Water	EPA 9040C	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	EPA 9040C	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	EPA 9040C	
180-81110-13	FIELD BLANK 1	Total/NA	Water	EPA 9040C	
LCS 180-255080/1	Lab Control Sample	Total/NA	Water	EPA 9040C	
180-81110-3 DU	CCR-AP-4R	Total/NA	Water	EPA 9040C	
180-81110-5 DU	CCR-LF-2	Total/NA	Water	EPA 9040C	

Analysis Batch: 255207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-6	CCR-LF-3	Total/NA	Water	EPA 9040C	
LCS 180-255207/1	Lab Control Sample	Total/NA	Water	EPA 9040C	

Rad

Prep Batch: 385342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	PrecSep-21	
180-81110-2	CCR-AP-3R	Total/NA	Water	PrecSep-21	
180-81110-3	CCR-AP-4R	Total/NA	Water	PrecSep-21	
180-81110-4	CCR-AP-5	Total/NA	Water	PrecSep-21	
180-81110-5	CCR-LF-2	Total/NA	Water	PrecSep-21	
180-81110-6	CCR-LF-3	Total/NA	Water	PrecSep-21	
180-81110-7	CCR-LF-4	Total/NA	Water	PrecSep-21	
180-81110-8	CCR-LF-5	Total/NA	Water	PrecSep-21	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater AB Brown

TestAmerica Job ID: 180-81110-1

Rad (Continued)


Prep Batch: 385342 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-9	CCR-LF-6	Total/NA	Water	PrecSep-21	
180-81110-10	CCR-BK-2	Total/NA	Water	PrecSep-21	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	PrecSep-21	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	PrecSep-21	
180-81110-13	FIELD BLANK 1	Total/NA	Water	PrecSep-21	
MB 160-385342/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-385342/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-81110-5 DU	CCR-LF-2	Total/NA	Water	PrecSep-21	

Prep Batch: 385353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81110-1	CCR-AP-2R	Total/NA	Water	PrecSep_0	
180-81110-2	CCR-AP-3R	Total/NA	Water	PrecSep_0	
180-81110-3	CCR-AP-4R	Total/NA	Water	PrecSep_0	
180-81110-4	CCR-AP-5	Total/NA	Water	PrecSep_0	
180-81110-5	CCR-LF-2	Total/NA	Water	PrecSep_0	
180-81110-6	CCR-LF-3	Total/NA	Water	PrecSep_0	
180-81110-7	CCR-LF-4	Total/NA	Water	PrecSep_0	
180-81110-8	CCR-LF-5	Total/NA	Water	PrecSep_0	
180-81110-9	CCR-LF-6	Total/NA	Water	PrecSep_0	
180-81110-10	CCR-BK-2	Total/NA	Water	PrecSep_0	
180-81110-11	BLIND DUPLICATE 1	Total/NA	Water	PrecSep_0	
180-81110-12	BLIND DUPLICATE 2	Total/NA	Water	PrecSep_0	
180-81110-13	FIELD BLANK 1	Total/NA	Water	PrecSep_0	
MB 160-385353/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-385353/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-81110-5 DU	CCR-LF-2	Total/NA	Water	PrecSep_0	

Chain of Custody Record

Client Information Client Contact: Angela Casbon-Scheller Company: Vectren Corporation Address: PO BOX 209 City: Evansville State, Zip: IN, 47702 Phone: 864-214-8750(Tel) Email: atcscheller@vectren.com Project Name: CCR Groundwater Monitoring - AB Brown Site: AB Brown Generating Station		Lab PM: Bortol, Veronica E-Mail: veronica.bortol@testamerica.com Carrier Tracking No(s): Job #:	
Due Date Requested: TAT Requested (days): PO #: Purchase Order Requested WO #:		Analysis Requested  180-81110 Chain of Custody	
Sample Date: 8/21/18 Sample Time: 1430 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Oil, BT-Tissue, Air/Mg): Water		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers: 5	
Sample Date: 8/20/18 Sample Time: 1040 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Oil, BT-Tissue, Air/Mg): Water		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers: 5	
Sample Date: 8/20/18 Sample Time: 1145 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Oil, BT-Tissue, Air/Mg): Water		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers: 5	
Sample Date: 8/21/18 Sample Time: 1300 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Oil, BT-Tissue, Air/Mg): Water		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers: 5	
Sample Date: 8/20/18 Sample Time: 1730 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Oil, BT-Tissue, Air/Mg): Water		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers: 5	
Sample Date: 8/21/18 Sample Time: 1645 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Oil, BT-Tissue, Air/Mg): Water		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers: 5	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input checked="" type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:			
Relinquished by: Jacob Winsell Date/Time: 8/21/18 1800 Company: ATC		Received by: Sedey Date/Time: 8/22/18 915 Company: MNR	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:			



Chain of Custody Record

Client Information		Sampler: <u>Jacob Winsett</u>		Lab PM: <u>Bortot, Veronica</u>		Carrier Tracking No(s):		COC No: <u>180-46372-8017.2</u>	
Client Contact: <u>Lisa Messinger</u>		Phone: <u>(817) 228-9422</u>		E-Mail: <u>veronica.bortot@testamericainc.com</u>				Page: <u>Page 2 of 3</u>	
Company: <u>Vectren Corporation</u>		Address: <u>PO BOX 209</u>		City: <u>Evansville</u>		State: <u>IN</u>		Zip: <u>47702</u>	
Phone: <u>864-214-8750(Tel)</u>		PO #: <u></u>		Purchase Order Requested: <u></u>		WO #: <u></u>			
Email: <u>lmessinger@vectren.com</u>		Project #: <u>18016014</u>		SOW#: <u></u>					
Project Name: <u>CCR Groundwater Monitoring - AB Brown</u>		Site: <u>AB Brown Generating Station</u>							

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code	Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of Containers	Special Instructions/Note:
						D	N	D	N		
CCR-LF-5	8/20/18	1045	G	Water				X	X		
CCR-LF-6	8/20/18	1145	G	Water				X	X		
EGR-BK-1R	8/20/18	1250	G	Water				X	X		
CCR-BK-2				Water				X	X		
GGR-SP-1				Water				X	X		
GCB-SP-2				Water				X	X		
EGR-SP-2				Water				X	X		
Blind Duplicate 1	8/21/18	-	G	Water				X	X		
Blind Duplicate 2	8/20/18	-	G	Water				X	X		
Blind Duplicate 3				Water				X	X		
Field Blank 1	8/21/18	0900	G	Water				X	X		

Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input checked="" type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: <u>Jacob Winsett</u>	Date: <u>8/21/18</u>	Received by: <u>[Signature]</u>	Date/Time: <u>8/22/18 915</u>
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Custody Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Company: <u>ATC</u>	Company: <u>M.P.B</u>



RT 97
02

6
15:00
3820
08-22
A

(317) 849-4990
DR STE 100
IN 462563381
US

SHIP DATE: 21AUG18
ACTWGT: 63.80 LB
CAD: /POS1904
DIMS: 24x14x13 IN
BILL SENDER

Part # 156529/SMW/0802/JA/ESS/12/00/2000000

TO
NICA BORTOT
TEST AMERICA
301 ALPHA DR
PITTSBURGH PA 15238
(412) 968-7068
REF:
DEPT:



FedEx
Express
E

2 of 3
MPS# 7824 1307 3820
Q681
Metr# 8007 0823 2390 0200
WED - 22 AUG 3:00P
STANDARD OVERNIGHT
15238
PA-US PIT

Uncorrected temp 23 °C
Thermometer ID 9
CF 0 Initials TS
PT-WI-SR-001 effective 12/01/13

- 1
- 2
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- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

ORIGIN ID:EVVA (317) 848-4990
CART GROUP SERVICES
7888 CENTERPOINT DR STE 100
INDIANAPOLIS, IN 462563381
UNITED STATES US

SHIP DATE: 21AUG18
ACTWGT: 69.80 LB
CAD: /POS1904
DIMS: 24x14x13 IN
BILL SENDER

Part # 156287 5604/6065/1255 12/18 21060058

TO VERONICA BORTOT
TEST AMERICA
301 ALPHA DR

PITTSBURGH PA 15238

(12) 983-7058 REF: DEPT:



FedEx
Express



of 3
1307 3830
0823 2390

WED - 22 AUG 3:00P
STANDARD OVERNIGHT

AGCA

15238
PA-US PIT

Uncorrected temp
Thermometer ID

4.7
9 °C
BS

CF 0 Initials

PT-WI-SR-001 effective 7/26/13

Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-81110-1

Login Number: 81110

List Number: 1

Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh

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	
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 <math><6\text{mm}</math> (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: Vectren Corporation

Job Number: 180-81110-1

Login Number: 81110
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 08/24/18 12:59 PM

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



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-81267-1

Client Project/Site: CCR Groundwater Monitoring AB Brown

For:

Vectren Corporation

PO BOX 209

Evansville, Indiana 47702

Attn: Accounts Payable



Authorized for release by:

10/11/2018 1:24:12 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

veronica.bortot@testamericainc.com

LINKS

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results through

TotalAccess

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www.testamericainc.com

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.

PA Lab ID: 02-00416

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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Job ID: 180-81267-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative 180-81267-1

Comments

No additional comments.

Receipt

The samples were received on 8/25/2018 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.6° C and 3.5° C.

GC Semi VOA

Method(s) 300.0, 9056A: The matrix spike/matrix spike duplicate (MS/MSD) recoveries for analytical batch 180-255765 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 300.0, 9056A: Due to an autosampler issue these samples were injected before the CCV which precedes them in the sequence. Both samples and CCV look to be acceptable so the data is reported.

CCR-AP-6 (180-81267-2) and (180-81267-D-6 MSD)

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

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.

RAD

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

Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Qualifiers

HPLC/IC

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.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

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

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)

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Laboratory: TestAmerica Pittsburgh

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
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-18
Oregon	NELAP	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-19

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	06-30-19
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	09-30-19
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

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

TestAmerica Pittsburgh

Accreditation/Certification Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

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
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 Pittsburgh

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-81267-1	CCR-AP-1R	Water	08/22/18 13:55	08/25/18 09:25
180-81267-2	CCR-AP-6	Water	08/22/18 14:55	08/25/18 09:25
180-81267-3	CCR-AP-7R	Water	08/22/18 12:00	08/25/18 09:25
180-81267-4	CCR-LF-1	Water	08/22/18 17:30	08/25/18 09:25
180-81267-5	CCR-SP-1	Water	08/23/18 10:25	08/25/18 09:25
180-81267-6	CCR-SP-2	Water	08/23/18 11:35	08/25/18 09:25
180-81267-7	CCR-SP-3	Water	08/23/18 13:00	08/25/18 09:25
180-81267-8	BLIND DUPLICATE 3	Water	08/23/18 00:00	08/25/18 09:25
180-81267-9	FIELD BLANK 2	Water	08/22/18 17:00	08/25/18 09:25
180-81267-10	FIELD BLANK 3	Water	08/23/18 17:00	08/25/18 09:25



Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
EPA 9040C	pH	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
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 PIT
7470A	Preparation, Mercury	SW846	TAL PIT
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 PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-1R

Date Collected: 08/22/18 13:55

Date Received: 08/25/18 09:25

Lab Sample ID: 180-81267-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		1			255765	09/04/18 21:12	JBF	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		10			255765	09/04/18 21:28	JBF	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256170	09/06/18 21:23	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256259	09/07/18 13:28	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256289	09/08/18 12:22	WTR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			256608	09/11/18 17:56	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255527	08/30/18 11:53	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255330	08/29/18 08:19	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	255279	08/28/18 15:31	RMA	TAL PIT
Total/NA	Prep	PrecSep-21			1000.05 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			391266	09/26/18 07:22	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.05 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			388633	09/12/18 08:46	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			391721	09/28/18 10:58	RTM	TAL SL

Client Sample ID: CCR-AP-6

Date Collected: 08/22/18 14:55

Date Received: 08/25/18 09:25

Lab Sample ID: 180-81267-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		2.5			255765	09/04/18 22:31	JBF	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		25			255765	09/04/18 23:19	JBF	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256170	09/06/18 21:26	RSK	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-6

Lab Sample ID: 180-81267-2

Date Collected: 08/22/18 14:55

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256259	09/07/18 13:31	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256289	09/08/18 12:25	WTR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1			256608	09/11/18 18:01	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255527	08/30/18 11:54	RJR	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255330	08/29/18 08:19	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	50 mL	100 mL	255279	08/28/18 15:31	RMA	TAL PIT
Total/NA	Prep	PrecSep-21			1000.32 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			391266	09/26/18 07:22	MAR	TAL SL
Total/NA	Prep	PrecSep_0			1000.32 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			388633	09/12/18 08:46	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			391721	09/28/18 10:58	RTM	TAL SL

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-81267-3

Date Collected: 08/22/18 12:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		2.5			255765	09/04/18 23:34	JBF	TAL PIT
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2100B		25			255765	09/04/18 23:50	JBF	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256170	09/06/18 21:29	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256259	09/07/18 13:34	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			256289	09/08/18 12:28	WTR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-81267-3

Date Collected: 08/22/18 12:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 18:06	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255527	08/30/18 11:55	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	255279	08/28/18 15:31	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			999.88 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391266	09/26/18 07:23	MAR	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Prep	PrecSep_0			999.88 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388633	09/12/18 08:46	CDR	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-81267-4

Date Collected: 08/22/18 17:30

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			255765	09/04/18 21:44	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total/NA	Analysis	EPA 9056A		10			255765	09/04/18 22:00	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 21:32	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 13:37	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256289	09/08/18 12:31	WTR	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 18:19	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255527	08/30/18 11:56	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-81267-4

Date Collected: 08/22/18 17:30

Matrix: Water

Date Received: 08/25/18 09:25

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	100 mL	100 mL	255279	08/28/18 15:31	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391268	09/26/18 07:24	MAR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388633	09/12/18 08:47	CDR	TAL SL
		Instrument ID: GFPCORANGE								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: CCR-SP-1

Lab Sample ID: 180-81267-5

Date Collected: 08/23/18 10:25

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			255765	09/05/18 00:06	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total/NA	Analysis	EPA 9056A		25			255765	09/05/18 00:22	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 21:35	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 13:40	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256289	09/08/18 12:34	WTR	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 18:24	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	255525	08/30/18 12:10	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391268	09/26/18 07:24	MAR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388766	09/12/18 08:50	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-SP-2

Lab Sample ID: 180-81267-6

Date Collected: 08/23/18 11:35

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		5			255765	09/04/18 18:50	JBF	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 21:37	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 13:43	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256289	09/08/18 12:37	WTR	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 18:29	WTR	TAL PIT
Instrument ID: M										
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	255525	08/30/18 12:10	RMA	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.41 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391268	09/26/18 07:24	MAR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.41 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388766	09/12/18 08:50	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: CCR-SP-3

Lab Sample ID: 180-81267-7

Date Collected: 08/23/18 13:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			255765	09/04/18 20:09	JBF	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 21:40	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 13:46	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256289	09/08/18 12:40	WTR	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-SP-3

Lab Sample ID: 180-81267-7

Date Collected: 08/23/18 13:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 18:33	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	255525	08/30/18 12:10	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.15 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391268	09/26/18 07:24	MAR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Prep	PrecSep_0			1000.15 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388766	09/12/18 08:50	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: BLIND DUPLICATE 3

Lab Sample ID: 180-81267-8

Date Collected: 08/23/18 00:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		2.5			255765	09/05/18 00:38	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total/NA	Analysis	EPA 9056A		25			255765	09/05/18 00:53	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 22:01	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 14:06	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256289	09/08/18 13:00	WTR	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 18:56	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255527	08/30/18 11:57	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	255529	08/30/18 12:17	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.35 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: BLIND DUPLICATE 3

Lab Sample ID: 180-81267-8

Date Collected: 08/23/18 00:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			391268	09/26/18 07:24	MAR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Prep	PrecSep_0			1000.35 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388766	09/12/18 08:50	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-81267-9

Date Collected: 08/22/18 17:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			255765	09/04/18 22:15	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 22:04	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 14:09	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 19:01	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255527	08/30/18 12:00	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	255279	08/28/18 15:31	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.30 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391268	09/26/18 07:24	MAR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Prep	PrecSep_0			1000.30 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388766	09/12/18 08:50	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

TestAmerica Pittsburgh

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: FIELD BLANK 3

Lab Sample ID: 180-81267-10

Date Collected: 08/23/18 17:00

Matrix: Water

Date Received: 08/25/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A		1			255765	09/05/18 01:09	JBF	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256170	09/06/18 22:07	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256259	09/07/18 14:12	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	255379	08/29/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A		1			256608	09/11/18 19:15	WTR	TAL PIT
		Instrument ID: M								
Total/NA	Prep	7470A			50 mL	50 mL	255321	08/29/18 07:38	KA	TAL PIT
Total/NA	Analysis	EPA 7470A		1			255527	08/30/18 12:01	RJR	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	EPA 9040C		1			255330	08/29/18 08:19	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	255529	08/30/18 12:17	RMA	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.10 mL	1.0 g	386243	08/30/18 13:09	JLC	TAL SL
Total/NA	Analysis	9315		1			391268	09/26/18 07:25	MAR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Prep	PrecSep_0			1000.10 mL	1.0 g	386250	08/30/18 13:49	JLC	TAL SL
Total/NA	Analysis	9320		1			388766	09/12/18 08:50	CDR	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			391721	09/28/18 10:58	RTM	TAL SL
		Instrument ID: NOEQUIP								

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Analyst References:

Lab: TAL PIT

Batch Type: Prep

KA = Kayla Kalamasz

NAM = Nicole Marfisi

Batch Type: Analysis

AVS = Abbey Smith

JBF = Joshua Fritsch

RJR = Ron Rosenbaum

RMA = Rachel Aguiar

RSK = Robert Kurtz

WTR = Bill Reinheimer

Lab: TAL SL

Batch Type: Prep

JLC = Jessica Chapman

Batch Type: Analysis

CDR = Conrad Reuscher

MAR = Morgan Reichert

RTM = Rachel Mueller

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Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-1R

Lab Sample ID: 180-81267-1

Date Collected: 08/22/18 13:55

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		1.0	0.71	mg/L			09/04/18 21:12	1
Fluoride	0.20		0.10	0.026	mg/L			09/04/18 21:12	1
Sulfate	900		10	3.8	mg/L			09/04/18 21:28	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00099	J	0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 21:23	1
Boron	0.57		0.080	0.030	mg/L		08/29/18 12:17	09/11/18 17:56	1
Barium	0.020		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 21:23	1
Calcium	280		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 21:23	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:17	09/06/18 21:23	1
Cobalt	0.0014		0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 21:23	1
Chromium	0.0023		0.0020	0.00063	mg/L		08/29/18 12:17	09/07/18 13:28	1
Molybdenum	0.0074		0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 21:23	1
Lead	0.00015	J	0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 21:23	1
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:17	09/06/18 21:23	1
Lithium	0.032	B	0.0050	0.0026	mg/L		08/29/18 12:17	09/08/18 12:22	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 11:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1800		10	10	mg/L			08/28/18 15:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.180		0.0746	0.0764	1.00	0.0739	pCi/L	08/30/18 13:09	09/26/18 07:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					08/30/18 13:09	09/26/18 07:22	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.192	U	0.270	0.271	1.00	0.450	pCi/L	08/30/18 13:49	09/12/18 08:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					08/30/18 13:49	09/12/18 08:46	1
Y Carrier	79.3		40 - 110					08/30/18 13:49	09/12/18 08:46	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-1R

Date Collected: 08/22/18 13:55

Date Received: 08/25/18 09:25

Lab Sample ID: 180-81267-1

Matrix: Water

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

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.372	U	0.280	0.282	5.00	0.450	pCi/L		09/28/18 10:58	1

Client Sample ID: CCR-AP-6

Date Collected: 08/22/18 14:55

Date Received: 08/25/18 09:25

Lab Sample ID: 180-81267-2

Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	160		2.5	1.8	mg/L			09/04/18 22:31	2.5
Fluoride	0.44		0.25	0.066	mg/L			09/04/18 22:31	2.5
Sulfate	1100		25	9.5	mg/L			09/04/18 23:19	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00046	J	0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 21:26	1
Boron	6.0		0.080	0.030	mg/L		08/29/18 12:17	09/11/18 18:01	1
Barium	0.015		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 21:26	1
Calcium	120		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 21:26	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:17	09/06/18 21:26	1
Cobalt	0.00017	J	0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 21:26	1
Chromium	0.0020		0.0020	0.00063	mg/L		08/29/18 12:17	09/07/18 13:31	1
Molybdenum	0.0032	J	0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 21:26	1
Lead	ND		0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 21:26	1
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:17	09/06/18 21:26	1
Lithium	0.0050	B	0.0050	0.0026	mg/L		08/29/18 12:17	09/08/18 12:25	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 11:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2500		20	20	mg/L			08/28/18 15:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.438		0.113	0.119	1.00	0.0874	pCi/L	08/30/18 13:09	09/26/18 07:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					08/30/18 13:09	09/26/18 07:22	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-6

Date Collected: 08/22/18 14:55

Date Received: 08/25/18 09:25

Lab Sample ID: 180-81267-2

Matrix: Water

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.420		0.262	0.265	1.00	0.404	pCi/L	08/30/18 13:49	09/12/18 08:46	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	99.1		40 - 110					08/30/18 13:49	09/12/18 08:46	1
Y Carrier	81.5		40 - 110					08/30/18 13:49	09/12/18 08:46	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.858		0.285	0.290	5.00	0.404	pCi/L		09/28/18 10:58	1

Client Sample ID: CCR-AP-7R

Date Collected: 08/22/18 12:00

Date Received: 08/25/18 09:25

Lab Sample ID: 180-81267-3

Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	320		2.5	1.8	mg/L			09/04/18 23:34	2.5
Fluoride	0.19	J	0.25	0.066	mg/L			09/04/18 23:34	2.5
Sulfate	2600		25	9.5	mg/L			09/04/18 23:50	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00077	J	0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 21:29	1
Boron	3.4		0.080	0.030	mg/L		08/29/18 12:17	09/11/18 18:06	1
Barium	0.031		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 21:29	1
Calcium	330		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 21:29	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:17	09/06/18 21:29	1
Cobalt	0.00049	J	0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 21:29	1
Chromium	0.0033		0.0020	0.00063	mg/L		08/29/18 12:17	09/07/18 13:34	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 21:29	1
Lead	0.00031	J	0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 21:29	1
Selenium	0.00099	J	0.0050	0.00081	mg/L		08/29/18 12:17	09/06/18 21:29	1
Lithium	0.019	B	0.0050	0.0026	mg/L		08/29/18 12:17	09/08/18 12:28	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 11:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	4500		40	40	mg/L			08/28/18 15:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1	0.1	SU			08/29/18 08:19	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-AP-7R

Lab Sample ID: 180-81267-3

Date Collected: 08/22/18 12:00

Matrix: Water

Date Received: 08/25/18 09:25

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.325		0.101	0.105	1.00	0.0884	pCi/L	08/30/18 13:09	09/26/18 07:23	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	98.5		40 - 110					08/30/18 13:09	09/26/18 07:23	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.410		0.250	0.253	1.00	0.382	pCi/L	08/30/18 13:49	09/12/18 08:46	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	98.5		40 - 110					08/30/18 13:49	09/12/18 08:46	1
Y Carrier	82.2		40 - 110					08/30/18 13:49	09/12/18 08:46	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.735		0.270	0.274	5.00	0.382	pCi/L		09/28/18 10:58	1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-81267-4

Date Collected: 08/22/18 17:30

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19		1.0	0.71	mg/L			09/04/18 21:44	1
Fluoride	0.26		0.10	0.026	mg/L			09/04/18 21:44	1
Sulfate	1200		10	3.8	mg/L			09/04/18 22:00	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0015		0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 21:32	1
Boron	0.040	J	0.080	0.030	mg/L		08/29/18 12:17	09/11/18 18:19	1
Barium	0.088		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 21:32	1
Calcium	270		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 21:32	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:17	09/06/18 21:32	1
Cobalt	0.00068		0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 21:32	1
Chromium	0.0062		0.0020	0.00063	mg/L		08/29/18 12:17	09/07/18 13:37	1
Molybdenum	0.0012	J	0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 21:32	1
Lead	0.0011		0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 21:32	1
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:17	09/06/18 21:32	1
Lithium	0.0080	B	0.0050	0.0026	mg/L		08/29/18 12:17	09/08/18 12:31	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 11:56	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-LF-1

Lab Sample ID: 180-81267-4

Date Collected: 08/22/18 17:30

Matrix: Water

Date Received: 08/25/18 09:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2000		10	10	mg/L			08/28/18 15:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.776		0.136	0.153	1.00	0.0716	pCi/L	08/30/18 13:09	09/26/18 07:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					08/30/18 13:09	09/26/18 07:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.281	U	0.212	0.213	1.00	0.334	pCi/L	08/30/18 13:49	09/12/18 08:47	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					08/30/18 13:49	09/12/18 08:47	1
Y Carrier	91.2		40 - 110					08/30/18 13:49	09/12/18 08:47	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.06		0.252	0.262	5.00	0.334	pCi/L		09/28/18 10:58	1

Client Sample ID: CCR-SP-1

Lab Sample ID: 180-81267-5

Date Collected: 08/23/18 10:25

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	140		2.5	1.8	mg/L			09/05/18 00:06	2.5
Fluoride	0.78		0.25	0.066	mg/L			09/05/18 00:06	2.5
Sulfate	1200		25	9.5	mg/L			09/05/18 00:22	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0045		0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 21:35	1
Boron	0.14		0.080	0.030	mg/L		08/29/18 12:17	09/11/18 18:24	1
Barium	0.066		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 21:35	1
Calcium	290		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 21:35	1
Cobalt	0.0072		0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 21:35	1
Chromium	0.0017	J	0.0020	0.00063	mg/L		08/29/18 12:17	09/07/18 13:40	1
Molybdenum	0.0011	J	0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 21:35	1
Lead	ND		0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 21:35	1
Lithium	0.0064	B	0.0050	0.0026	mg/L		08/29/18 12:17	09/08/18 12:34	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-SP-1

Lab Sample ID: 180-81267-5

Date Collected: 08/23/18 10:25

Matrix: Water

Date Received: 08/25/18 09:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2300		20	20	mg/L			08/30/18 12:10	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.195		0.0781	0.0801	1.00	0.0775	pCi/L	08/30/18 13:09	09/26/18 07:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					08/30/18 13:09	09/26/18 07:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.542		0.328	0.332	1.00	0.506	pCi/L	08/30/18 13:49	09/12/18 08:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					08/30/18 13:49	09/12/18 08:50	1
Y Carrier	74.0		40 - 110					08/30/18 13:49	09/12/18 08:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.737		0.337	0.342	5.00	0.506	pCi/L		09/28/18 10:58	1

Client Sample ID: CCR-SP-2

Lab Sample ID: 180-81267-6

Date Collected: 08/23/18 11:35

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	70		5.0	3.6	mg/L			09/04/18 18:50	5
Fluoride	0.32	J	0.50	0.13	mg/L			09/04/18 18:50	5
Sulfate	380	F1	5.0	1.9	mg/L			09/04/18 18:50	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00064	J	0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 21:37	1
Boron	0.18		0.080	0.030	mg/L		08/29/18 12:17	09/11/18 18:29	1
Barium	0.12		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 21:37	1
Calcium	160		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 21:37	1
Cobalt	0.00072		0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 21:37	1
Chromium	0.0021		0.0020	0.00063	mg/L		08/29/18 12:17	09/07/18 13:43	1
Molybdenum	0.0012	J	0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 21:37	1
Lead	0.00026	J	0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 21:37	1
Lithium	0.0073	B	0.0050	0.0026	mg/L		08/29/18 12:17	09/08/18 12:37	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-SP-2

Lab Sample ID: 180-81267-6

Date Collected: 08/23/18 11:35

Matrix: Water

Date Received: 08/25/18 09:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1100		10	10	mg/L			08/30/18 12:10	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.243		0.0833	0.0861	1.00	0.0612	pCi/L	08/30/18 13:09	09/26/18 07:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					08/30/18 13:09	09/26/18 07:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.18		0.344	0.361	1.00	0.452	pCi/L	08/30/18 13:49	09/12/18 08:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					08/30/18 13:49	09/12/18 08:50	1
Y Carrier	78.1		40 - 110					08/30/18 13:49	09/12/18 08:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.42		0.354	0.371	5.00	0.452	pCi/L		09/28/18 10:58	1

Client Sample ID: CCR-SP-3

Lab Sample ID: 180-81267-7

Date Collected: 08/23/18 13:00

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.4		1.0	0.71	mg/L			09/04/18 20:09	1
Fluoride	0.25		0.10	0.026	mg/L			09/04/18 20:09	1
Sulfate	9.9		1.0	0.38	mg/L			09/04/18 20:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0039		0.0010	0.00032	mg/L		08/29/18 12:19	09/06/18 21:40	1
Boron	ND		0.080	0.030	mg/L		08/29/18 12:19	09/11/18 18:33	1
Barium	0.068		0.010	0.00037	mg/L		08/29/18 12:19	09/06/18 21:40	1
Calcium	83		0.50	0.12	mg/L		08/29/18 12:19	09/06/18 21:40	1
Cobalt	0.00046	J	0.00050	0.000075	mg/L		08/29/18 12:19	09/06/18 21:40	1
Chromium	0.0022		0.0020	0.00063	mg/L		08/29/18 12:19	09/07/18 13:46	1
Molybdenum	0.0027	J	0.0050	0.00047	mg/L		08/29/18 12:19	09/06/18 21:40	1
Lead	0.00012	J	0.0010	0.000094	mg/L		08/29/18 12:19	09/06/18 21:40	1
Lithium	0.0034	J B	0.0050	0.0026	mg/L		08/29/18 12:19	09/08/18 12:40	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: CCR-SP-3

Lab Sample ID: 180-81267-7

Date Collected: 08/23/18 13:00

Matrix: Water

Date Received: 08/25/18 09:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	390		10	10	mg/L			08/30/18 12:10	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.197		0.0795	0.0815	1.00	0.0779	pCi/L	08/30/18 13:09	09/26/18 07:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					08/30/18 13:09	09/26/18 07:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.285	U	0.252	0.253	1.00	0.405	pCi/L	08/30/18 13:49	09/12/18 08:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					08/30/18 13:49	09/12/18 08:50	1
Y Carrier	86.0		40 - 110					08/30/18 13:49	09/12/18 08:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.483		0.264	0.266	5.00	0.405	pCi/L		09/28/18 10:58	1

Client Sample ID: BLIND DUPLICATE 3

Lab Sample ID: 180-81267-8

Date Collected: 08/23/18 00:00

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	150		2.5	1.8	mg/L			09/05/18 00:38	2.5
Fluoride	0.37		0.25	0.066	mg/L			09/05/18 00:38	2.5
Sulfate	1100		25	9.5	mg/L			09/05/18 00:53	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0046		0.0010	0.00032	mg/L		08/29/18 12:19	09/06/18 22:01	1
Boron	0.16		0.080	0.030	mg/L		08/29/18 12:19	09/11/18 18:56	1
Barium	0.071		0.010	0.00037	mg/L		08/29/18 12:19	09/06/18 22:01	1
Calcium	310		0.50	0.12	mg/L		08/29/18 12:19	09/06/18 22:01	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:19	09/06/18 22:01	1
Cobalt	0.0073		0.00050	0.000075	mg/L		08/29/18 12:19	09/06/18 22:01	1
Chromium	0.0026		0.0020	0.00063	mg/L		08/29/18 12:19	09/07/18 14:06	1
Molybdenum	0.0015	J	0.0050	0.00047	mg/L		08/29/18 12:19	09/06/18 22:01	1
Lead	0.000099	J	0.0010	0.000094	mg/L		08/29/18 12:19	09/06/18 22:01	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: BLIND DUPLICATE 3

Lab Sample ID: 180-81267-8

Date Collected: 08/23/18 00:00

Matrix: Water

Date Received: 08/25/18 09:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:19	09/06/18 22:01	1
Lithium	0.0070	B	0.0050	0.0026	mg/L		08/29/18 12:19	09/08/18 13:00	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 11:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	2300		20	20	mg/L			08/30/18 12:17	1
pH	6.8	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.226		0.0820	0.0845	1.00	0.0762	pCi/L	08/30/18 13:09	09/26/18 07:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					08/30/18 13:09	09/26/18 07:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.246	U	0.243	0.244	1.00	0.394	pCi/L	08/30/18 13:49	09/12/18 08:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					08/30/18 13:49	09/12/18 08:50	1
Y Carrier	81.1		40 - 110					08/30/18 13:49	09/12/18 08:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.472		0.256	0.258	5.00	0.394	pCi/L		09/28/18 10:58	1

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-81267-9

Date Collected: 08/22/18 17:00

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			09/04/18 22:15	1
Fluoride	0.028	J	0.10	0.026	mg/L			09/04/18 22:15	1
Sulfate	0.75	J	1.0	0.38	mg/L			09/04/18 22:15	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		08/29/18 12:19	09/06/18 22:04	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: FIELD BLANK 2

Lab Sample ID: 180-81267-9

Date Collected: 08/22/18 17:00

Matrix: Water

Date Received: 08/25/18 09:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.080	0.030	mg/L		08/29/18 12:19	09/11/18 19:01	1
Barium	ND		0.010	0.00037	mg/L		08/29/18 12:19	09/06/18 22:04	1
Calcium	ND		0.50	0.12	mg/L		08/29/18 12:19	09/06/18 22:04	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:19	09/06/18 22:04	1
Cobalt	ND		0.00050	0.000075	mg/L		08/29/18 12:19	09/06/18 22:04	1
Chromium	0.0013	J	0.0020	0.00063	mg/L		08/29/18 12:19	09/07/18 14:09	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/29/18 12:19	09/06/18 22:04	1
Lead	ND		0.0010	0.000094	mg/L		08/29/18 12:19	09/06/18 22:04	1
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:19	09/06/18 22:04	1
Lithium	ND	^	0.0050	0.0026	mg/L		08/29/18 12:19	09/07/18 14:09	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 12:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			08/28/18 15:31	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.4	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.184		0.0730	0.0748	1.00	0.0696	pCi/L	08/30/18 13:09	09/26/18 07:24	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	08/30/18 13:09	09/26/18 07:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.531		0.236	0.241	1.00	0.335	pCi/L	08/30/18 13:49	09/12/18 08:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	08/30/18 13:49	09/12/18 08:50	1
Y Carrier	86.7		40 - 110	08/30/18 13:49	09/12/18 08:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.716		0.247	0.252	5.00	0.335	pCi/L		09/28/18 10:58	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: FIELD BLANK 3

Lab Sample ID: 180-81267-10

Date Collected: 08/23/18 17:00

Matrix: Water

Date Received: 08/25/18 09:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			09/05/18 01:09	1
Fluoride	0.13		0.10	0.026	mg/L			09/05/18 01:09	1
Sulfate	0.63	J	1.0	0.38	mg/L			09/05/18 01:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		08/29/18 12:19	09/06/18 22:07	1
Boron	ND		0.080	0.030	mg/L		08/29/18 12:19	09/11/18 19:15	1
Barium	0.0011	J	0.010	0.00037	mg/L		08/29/18 12:19	09/06/18 22:07	1
Calcium	ND		0.50	0.12	mg/L		08/29/18 12:19	09/06/18 22:07	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:19	09/06/18 22:07	1
Cobalt	ND		0.00050	0.000075	mg/L		08/29/18 12:19	09/06/18 22:07	1
Chromium	0.0016	J	0.0020	0.00063	mg/L		08/29/18 12:19	09/07/18 14:12	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/29/18 12:19	09/06/18 22:07	1
Lead	ND		0.0010	0.000094	mg/L		08/29/18 12:19	09/06/18 22:07	1
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:19	09/06/18 22:07	1
Lithium	ND	^	0.0050	0.0026	mg/L		08/29/18 12:19	09/07/18 14:12	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 12:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			08/30/18 12:17	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	4.7	HF	0.1	0.1	SU			08/29/18 08:19	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.198		0.0749	0.0770	1.00	0.0685	pCi/L	08/30/18 13:09	09/26/18 07:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					08/30/18 13:09	09/26/18 07:25	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.294	U	0.219	0.221	1.00	0.344	pCi/L	08/30/18 13:49	09/12/18 08:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					08/30/18 13:49	09/12/18 08:50	1
Y Carrier	84.5		40 - 110					08/30/18 13:49	09/12/18 08:50	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Client Sample ID: FIELD BLANK 3

Lab Sample ID: 180-81267-10

Date Collected: 08/23/18 17:00

Matrix: Water

Date Received: 08/25/18 09:25

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.492		0.231	0.234	5.00	0.344	pCi/L		09/28/18 10:58	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-255765/39
Matrix: Water
Analysis Batch: 255765

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			09/04/18 16:59	1
Fluoride	ND		0.10	0.026	mg/L			09/04/18 16:59	1
Sulfate	ND		1.0	0.38	mg/L			09/04/18 16:59	1

Lab Sample ID: LCS 180-255765/40
Matrix: Water
Analysis Batch: 255765

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	26.6		mg/L		107	80 - 120
Fluoride	1.25	1.14		mg/L		91	80 - 120
Sulfate	25.0	26.4		mg/L		106	80 - 120

Lab Sample ID: 180-81267-6 MS
Matrix: Water
Analysis Batch: 255765

Client Sample ID: CCR-SP-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	70		125	181		mg/L		89	80 - 120
Fluoride	0.32	J	6.25	5.71		mg/L		86	80 - 120
Sulfate	380	F1	125	453	F1	mg/L		62	80 - 120

Lab Sample ID: 180-81267-6 MSD
Matrix: Water
Analysis Batch: 255765

Client Sample ID: CCR-SP-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	70		125	181		mg/L		89	80 - 120	0	15
Fluoride	0.32	J	6.25	5.39		mg/L		81	80 - 120	6	15
Sulfate	380	F1	125	453	F1	mg/L		62	80 - 120	0	15

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

Lab Sample ID: MB 180-255379/1-A
Matrix: Water
Analysis Batch: 256170

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		08/29/18 12:17	09/06/18 20:27	1
Barium	ND		0.010	0.00037	mg/L		08/29/18 12:17	09/06/18 20:27	1
Calcium	ND		0.50	0.12	mg/L		08/29/18 12:17	09/06/18 20:27	1
Cadmium	ND		0.0010	0.00013	mg/L		08/29/18 12:17	09/06/18 20:27	1
Cobalt	ND		0.00050	0.000075	mg/L		08/29/18 12:17	09/06/18 20:27	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/29/18 12:17	09/06/18 20:27	1
Lead	ND		0.0010	0.000094	mg/L		08/29/18 12:17	09/06/18 20:27	1
Selenium	ND		0.0050	0.00081	mg/L		08/29/18 12:17	09/06/18 20:27	1
Lithium	0.00276	J	0.0050	0.0026	mg/L		08/29/18 12:17	09/06/18 20:27	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

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

Lab Sample ID: MB 180-255379/1-A
Matrix: Water
Analysis Batch: 256259

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.010	0.00037	mg/L		08/29/18 12:17	09/07/18 12:26	1
Lithium	ND		0.0050	0.0026	mg/L		08/29/18 12:17	09/07/18 12:26	1

Lab Sample ID: MB 180-255379/1-A
Matrix: Water
Analysis Batch: 256608

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.080	0.030	mg/L		08/29/18 12:17	09/11/18 17:33	1

Lab Sample ID: LCS 180-255379/2-A
Matrix: Water
Analysis Batch: 256170

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0400	0.0373		mg/L		93	80 - 120
Barium	2.00	2.17		mg/L		108	80 - 120
Calcium	50.0	51.3		mg/L		103	80 - 120
Cadmium	0.0500	0.0571		mg/L		114	80 - 120
Cobalt	0.500	0.454		mg/L		91	80 - 120
Molybdenum	1.00	1.03		mg/L		103	80 - 120
Lead	0.0200	0.0219		mg/L		110	80 - 120
Selenium	0.0100	0.0118		mg/L		118	80 - 120

Lab Sample ID: LCS 180-255379/2-A
Matrix: Water
Analysis Batch: 256259

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.200	0.193		mg/L		97	80 - 120
Lithium	0.0500	0.0506		mg/L		101	80 - 120

Lab Sample ID: LCS 180-255379/2-A
Matrix: Water
Analysis Batch: 256608

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.910		mg/L		91	80 - 120

Lab Sample ID: 180-81267-7 MS
Matrix: Water
Analysis Batch: 256170

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0039		0.0400	0.0414		mg/L		94	75 - 125
Barium	0.068		2.00	2.25		mg/L		109	75 - 125
Calcium	83		50.0	136		mg/L		105	75 - 125
Cadmium	ND		0.0500	0.0572		mg/L		114	75 - 125
Cobalt	0.00046	J	0.500	0.458		mg/L		91	75 - 125

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

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

Lab Sample ID: 180-81267-7 MS
Matrix: Water
Analysis Batch: 256170

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Molybdenum	0.0027	J	1.00	1.03		mg/L		102		75 - 125
Lead	0.00012	J	0.0200	0.0219		mg/L		109		75 - 125
Selenium	ND		0.0100	0.0129	4	mg/L		129		75 - 125

Lab Sample ID: 180-81267-7 MS
Matrix: Water
Analysis Batch: 256259

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Chromium	0.0022		0.200	0.219		mg/L		109		75 - 125

Lab Sample ID: 180-81267-7 MS
Matrix: Water
Analysis Batch: 256289

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Cadmium	ND		0.0500	0.0557		mg/L		111		75 - 125
Selenium	ND		0.0100	0.00898		mg/L		90		75 - 125
Lithium	0.0034	J B	0.0500	0.0516		mg/L		97		75 - 125

Lab Sample ID: 180-81267-7 MS
Matrix: Water
Analysis Batch: 256608

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Boron	ND		1.00	0.914		mg/L		91		75 - 125

Lab Sample ID: 180-81267-7 MSD
Matrix: Water
Analysis Batch: 256170

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Arsenic	0.0039		0.0400	0.0406		mg/L		92		75 - 125	2	20
Barium	0.068		2.00	2.24		mg/L		109		75 - 125	0	20
Calcium	83		50.0	133		mg/L		100		75 - 125	2	20
Cadmium	ND		0.0500	0.0576		mg/L		115		75 - 125	1	20
Cobalt	0.00046	J	0.500	0.442		mg/L		88		75 - 125	3	20
Molybdenum	0.0027	J	1.00	1.03		mg/L		103		75 - 125	0	20
Lead	0.00012	J	0.0200	0.0217		mg/L		108		75 - 125	1	20
Selenium	ND		0.0100	0.0125	4	mg/L		125		75 - 125	3	20

Lab Sample ID: 180-81267-7 MSD
Matrix: Water
Analysis Batch: 256259

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Arsenic	0.0045		0.0400	0.0437		mg/L		98		75 - 125	1	20
Barium	0.064		2.00	2.18		mg/L		106		75 - 125	2	20
Calcium	86		50.0	136		mg/L		101		75 - 125	3	20

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

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

Lab Sample ID: 180-81267-7 MSD
Matrix: Water
Analysis Batch: 256259

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND		0.0500	0.0573		mg/L		115	75 - 125	1	20
Cobalt	0.00053		0.500	0.500		mg/L		100	75 - 125	2	20
Chromium	0.0022		0.200	0.218		mg/L		108	75 - 125	1	20
Molybdenum	0.0028	J	1.00	1.07		mg/L		106	75 - 125	1	20
Lead	0.00013	J	0.0200	0.0221		mg/L		110	75 - 125	1	20
Selenium	ND		0.0100	0.00822		mg/L		82	75 - 125	0	20

Lab Sample ID: 180-81267-7 MSD
Matrix: Water
Analysis Batch: 256289

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND		0.0500	0.0554		mg/L		111	75 - 125	1	20
Selenium	ND		0.0100	0.00857		mg/L		86	75 - 125	5	20
Lithium	0.0034	J B	0.0500	0.0509		mg/L		95	75 - 125	1	20

Lab Sample ID: 180-81267-7 MSD
Matrix: Water
Analysis Batch: 256608

Client Sample ID: CCR-SP-3
Prep Type: Total Recoverable
Prep Batch: 255379

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Boron	ND		1.00	0.921		mg/L		92	75 - 125	1	20

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-255321/1-A
Matrix: Water
Analysis Batch: 255527

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 255321

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00020	0.000065	mg/L		08/29/18 07:38	08/30/18 11:38	1

Lab Sample ID: LCS 180-255321/2-A
Matrix: Water
Analysis Batch: 255527

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 255321

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
Mercury	0.00250	0.00245		mg/L		98	80 - 120

Method: EPA 9040C - pH

Lab Sample ID: LCS 180-255330/1
Matrix: Water
Analysis Batch: 255330

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

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
pH	7.00	7.1		SU		101	99 - 101

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Method: EPA 9040C - pH (Continued)

Lab Sample ID: 180-81267-4 DU
 Matrix: Water
 Analysis Batch: 255330

Client Sample ID: CCR-LF-1
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	6.9	HF	6.8		SU		0.1	2

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

Lab Sample ID: MB 180-255279/2
 Matrix: Water
 Analysis Batch: 255279

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	ND		10	10	mg/L			08/28/18 15:31	1

Lab Sample ID: LCS 180-255279/1
 Matrix: Water
 Analysis Batch: 255279

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	494	502		mg/L		102	80 - 120

Lab Sample ID: MB 180-255525/2
 Matrix: Water
 Analysis Batch: 255525

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	ND		10	10	mg/L			08/30/18 12:10	1

Lab Sample ID: LCS 180-255525/1
 Matrix: Water
 Analysis Batch: 255525

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	494	500		mg/L		101	80 - 120

Lab Sample ID: 180-81267-5 DU
 Matrix: Water
 Analysis Batch: 255525

Client Sample ID: CCR-SP-1
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	2300		2330		mg/L		1	10

Lab Sample ID: MB 180-255529/2
 Matrix: Water
 Analysis Batch: 255529

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	ND		10	10	mg/L			08/30/18 12:17	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

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

Lab Sample ID: LCS 180-255529/1
Matrix: Water
Analysis Batch: 255529

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	494	506		mg/L		102	80 - 120

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-386243/23-A
Matrix: Water
Analysis Batch: 391268

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386243

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1583		0.0707	0.0721	1.00	0.0738	pCi/L	08/30/18 13:09	09/26/18 07:25	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					08/30/18 13:09	09/26/18 07:25	1

Lab Sample ID: LCS 160-386243/1-A
Matrix: Water
Analysis Batch: 391266

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386243

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	10.82		1.11	1.00	0.0643	pCi/L	95	68 - 137
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	106		40 - 110						

Lab Sample ID: LCSD 160-386243/2-A
Matrix: Water
Analysis Batch: 391266

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386243

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	11.44		1.16	1.00	0.0692	pCi/L	101	68 - 137	0.27	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	98.5		40 - 110								

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-386250/23-A
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386250

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1865	U	0.224	0.224	1.00	0.369	pCi/L	08/30/18 13:49	09/12/18 08:50	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

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

Lab Sample ID: MB 160-386250/23-A
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386250

Carrier	MB MB		Limits
	%Yield	Qualifier	
Ba Carrier	97.9		40 - 110
Y Carrier	85.2		40 - 110

Prepared	Analyzed	Dil Fac
08/30/18 13:49	09/12/18 08:50	1
08/30/18 13:49	09/12/18 08:50	1

Lab Sample ID: LCS 160-386250/1-A
Matrix: Water
Analysis Batch: 388632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386250

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									56	140
Radium-228	11.0	11.89		1.29	1.00	0.323	pCi/L	108	56 - 140	

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	106		40 - 110
Y Carrier	82.6		40 - 110

Lab Sample ID: LCSD 160-386250/2-A
Matrix: Water
Analysis Batch: 388632

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386250

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
									56	140	0.24	1
Radium-228	11.0	12.54		1.38	1.00	0.345	pCi/L	114	56 - 140	0.24	1	

Carrier	LCSD LCSD		Limits
	%Yield	Qualifier	
Ba Carrier	98.5		40 - 110
Y Carrier	80.4		40 - 110

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

HPLC/IC

Analysis Batch: 255765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	EPA 9056A	
180-81267-1	CCR-AP-1R	Total/NA	Water	EPA 9056A	
180-81267-2	CCR-AP-6	Total/NA	Water	EPA 9056A	
180-81267-2	CCR-AP-6	Total/NA	Water	EPA 9056A	
180-81267-3	CCR-AP-7R	Total/NA	Water	EPA 9056A	
180-81267-3	CCR-AP-7R	Total/NA	Water	EPA 9056A	
180-81267-4	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-81267-4	CCR-LF-1	Total/NA	Water	EPA 9056A	
180-81267-5	CCR-SP-1	Total/NA	Water	EPA 9056A	
180-81267-5	CCR-SP-1	Total/NA	Water	EPA 9056A	
180-81267-6	CCR-SP-2	Total/NA	Water	EPA 9056A	
180-81267-7	CCR-SP-3	Total/NA	Water	EPA 9056A	
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	EPA 9056A	
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	EPA 9056A	
180-81267-9	FIELD BLANK 2	Total/NA	Water	EPA 9056A	
180-81267-10	FIELD BLANK 3	Total/NA	Water	EPA 9056A	
MB 180-255765/39	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-255765/40	Lab Control Sample	Total/NA	Water	EPA 9056A	
180-81267-6 MS	CCR-SP-2	Total/NA	Water	EPA 9056A	
180-81267-6 MSD	CCR-SP-2	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 255321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	7470A	
180-81267-2	CCR-AP-6	Total/NA	Water	7470A	
180-81267-3	CCR-AP-7R	Total/NA	Water	7470A	
180-81267-4	CCR-LF-1	Total/NA	Water	7470A	
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	7470A	
180-81267-9	FIELD BLANK 2	Total/NA	Water	7470A	
180-81267-10	FIELD BLANK 3	Total/NA	Water	7470A	
MB 180-255321/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-255321/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 255379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total Recoverable	Water	3005A	
180-81267-2	CCR-AP-6	Total Recoverable	Water	3005A	
180-81267-3	CCR-AP-7R	Total Recoverable	Water	3005A	
180-81267-4	CCR-LF-1	Total Recoverable	Water	3005A	
180-81267-5	CCR-SP-1	Total Recoverable	Water	3005A	
180-81267-6	CCR-SP-2	Total Recoverable	Water	3005A	
180-81267-7	CCR-SP-3	Total Recoverable	Water	3005A	
180-81267-8	BLIND DUPLICATE 3	Total Recoverable	Water	3005A	
180-81267-9	FIELD BLANK 2	Total Recoverable	Water	3005A	
180-81267-10	FIELD BLANK 3	Total Recoverable	Water	3005A	
MB 180-255379/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-255379/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-81267-7 MS	CCR-SP-3	Total Recoverable	Water	3005A	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Metals (Continued)

Prep Batch: 255379 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-7 MSD	CCR-SP-3	Total Recoverable	Water	3005A	

Analysis Batch: 255527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	EPA 7470A	255321
180-81267-2	CCR-AP-6	Total/NA	Water	EPA 7470A	255321
180-81267-3	CCR-AP-7R	Total/NA	Water	EPA 7470A	255321
180-81267-4	CCR-LF-1	Total/NA	Water	EPA 7470A	255321
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	EPA 7470A	255321
180-81267-9	FIELD BLANK 2	Total/NA	Water	EPA 7470A	255321
180-81267-10	FIELD BLANK 3	Total/NA	Water	EPA 7470A	255321
MB 180-255321/1-A	Method Blank	Total/NA	Water	EPA 7470A	255321
LCS 180-255321/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	255321

Analysis Batch: 256170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total Recoverable	Water	EPA 6020A	255379
180-81267-2	CCR-AP-6	Total Recoverable	Water	EPA 6020A	255379
180-81267-3	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	255379
180-81267-4	CCR-LF-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-5	CCR-SP-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-6	CCR-SP-2	Total Recoverable	Water	EPA 6020A	255379
180-81267-7	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-8	BLIND DUPLICATE 3	Total Recoverable	Water	EPA 6020A	255379
180-81267-9	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	255379
180-81267-10	FIELD BLANK 3	Total Recoverable	Water	EPA 6020A	255379
MB 180-255379/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	255379
LCS 180-255379/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MS	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MSD	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379

Analysis Batch: 256259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total Recoverable	Water	EPA 6020A	255379
180-81267-2	CCR-AP-6	Total Recoverable	Water	EPA 6020A	255379
180-81267-3	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	255379
180-81267-4	CCR-LF-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-5	CCR-SP-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-6	CCR-SP-2	Total Recoverable	Water	EPA 6020A	255379
180-81267-7	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-8	BLIND DUPLICATE 3	Total Recoverable	Water	EPA 6020A	255379
180-81267-9	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	255379
180-81267-10	FIELD BLANK 3	Total Recoverable	Water	EPA 6020A	255379
MB 180-255379/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	255379
LCS 180-255379/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MS	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MSD	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379

Analysis Batch: 256289

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total Recoverable	Water	EPA 6020A	255379

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Metals (Continued)

Analysis Batch: 256289 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-2	CCR-AP-6	Total Recoverable	Water	EPA 6020A	255379
180-81267-3	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	255379
180-81267-4	CCR-LF-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-5	CCR-SP-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-6	CCR-SP-2	Total Recoverable	Water	EPA 6020A	255379
180-81267-7	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-8	BLIND DUPLICATE 3	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MS	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MSD	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379

Analysis Batch: 256608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total Recoverable	Water	EPA 6020A	255379
180-81267-2	CCR-AP-6	Total Recoverable	Water	EPA 6020A	255379
180-81267-3	CCR-AP-7R	Total Recoverable	Water	EPA 6020A	255379
180-81267-4	CCR-LF-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-5	CCR-SP-1	Total Recoverable	Water	EPA 6020A	255379
180-81267-6	CCR-SP-2	Total Recoverable	Water	EPA 6020A	255379
180-81267-7	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-8	BLIND DUPLICATE 3	Total Recoverable	Water	EPA 6020A	255379
180-81267-9	FIELD BLANK 2	Total Recoverable	Water	EPA 6020A	255379
180-81267-10	FIELD BLANK 3	Total Recoverable	Water	EPA 6020A	255379
MB 180-255379/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	255379
LCS 180-255379/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MS	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379
180-81267-7 MSD	CCR-SP-3	Total Recoverable	Water	EPA 6020A	255379

General Chemistry

Analysis Batch: 255279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	SM 2540C	
180-81267-2	CCR-AP-6	Total/NA	Water	SM 2540C	
180-81267-3	CCR-AP-7R	Total/NA	Water	SM 2540C	
180-81267-4	CCR-LF-1	Total/NA	Water	SM 2540C	
180-81267-9	FIELD BLANK 2	Total/NA	Water	SM 2540C	
MB 180-255279/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-255279/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 255330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	EPA 9040C	
180-81267-2	CCR-AP-6	Total/NA	Water	EPA 9040C	
180-81267-3	CCR-AP-7R	Total/NA	Water	EPA 9040C	
180-81267-4	CCR-LF-1	Total/NA	Water	EPA 9040C	
180-81267-5	CCR-SP-1	Total/NA	Water	EPA 9040C	
180-81267-6	CCR-SP-2	Total/NA	Water	EPA 9040C	
180-81267-7	CCR-SP-3	Total/NA	Water	EPA 9040C	
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	EPA 9040C	
180-81267-9	FIELD BLANK 2	Total/NA	Water	EPA 9040C	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

General Chemistry (Continued)

Analysis Batch: 255330 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-10	FIELD BLANK 3	Total/NA	Water	EPA 9040C	
LCS 180-255330/1	Lab Control Sample	Total/NA	Water	EPA 9040C	
180-81267-4 DU	CCR-LF-1	Total/NA	Water	EPA 9040C	

Analysis Batch: 255525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-5	CCR-SP-1	Total/NA	Water	SM 2540C	
180-81267-6	CCR-SP-2	Total/NA	Water	SM 2540C	
180-81267-7	CCR-SP-3	Total/NA	Water	SM 2540C	
MB 180-255525/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-255525/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-81267-5 DU	CCR-SP-1	Total/NA	Water	SM 2540C	

Analysis Batch: 255529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	SM 2540C	
180-81267-10	FIELD BLANK 3	Total/NA	Water	SM 2540C	
MB 180-255529/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-255529/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 386243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	PrecSep-21	
180-81267-2	CCR-AP-6	Total/NA	Water	PrecSep-21	
180-81267-3	CCR-AP-7R	Total/NA	Water	PrecSep-21	
180-81267-4	CCR-LF-1	Total/NA	Water	PrecSep-21	
180-81267-5	CCR-SP-1	Total/NA	Water	PrecSep-21	
180-81267-6	CCR-SP-2	Total/NA	Water	PrecSep-21	
180-81267-7	CCR-SP-3	Total/NA	Water	PrecSep-21	
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	PrecSep-21	
180-81267-9	FIELD BLANK 2	Total/NA	Water	PrecSep-21	
180-81267-10	FIELD BLANK 3	Total/NA	Water	PrecSep-21	
MB 160-386243/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-386243/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-386243/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 386250

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81267-1	CCR-AP-1R	Total/NA	Water	PrecSep_0	
180-81267-2	CCR-AP-6	Total/NA	Water	PrecSep_0	
180-81267-3	CCR-AP-7R	Total/NA	Water	PrecSep_0	
180-81267-4	CCR-LF-1	Total/NA	Water	PrecSep_0	
180-81267-5	CCR-SP-1	Total/NA	Water	PrecSep_0	
180-81267-6	CCR-SP-2	Total/NA	Water	PrecSep_0	
180-81267-7	CCR-SP-3	Total/NA	Water	PrecSep_0	
180-81267-8	BLIND DUPLICATE 3	Total/NA	Water	PrecSep_0	
180-81267-9	FIELD BLANK 2	Total/NA	Water	PrecSep_0	
180-81267-10	FIELD BLANK 3	Total/NA	Water	PrecSep_0	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81267-1

Rad (Continued)

Prep Batch: 386250 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-386250/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-386250/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-386250/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Chain of Custody Record

Client Information Client Contact: Angela Casbon-Scheller Company: Vectren Corporation Address: PO BOX 209 City: Evansville State, Zip: IN, 47702 Phone: 864-214-8750(Tel) Email: acscheller@Vectren.com Project Name: CCR Groundwater Monitoring - AB Brown Site:		Sampler: <i>Jacob Winsett</i> Lab PM: Bortot, Veronica Phone: (617) 228-9422 E-Mail: veronica.bortot@testamericainc.com		Carrier Tracking No(s): COC No: 180-46372-8017.3 Page: Page 3 of 3 Job #:	
Due Date Requested: TAT Requested (days): PO #: Purchase Order Requested WO #:		Analysis Requested			
Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Total Number of Containers:		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 - EDTA Other:			
Sample Identification		Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Special Instructions/Note: -Do NOT run Antimony, Beryllium and Thallium for ALL samples. Do NOT run Cadmium, Mercury and Selenium for the following wells: CCR-SP-1, CCR-SP-2, CCR-SP-3 Analyze for App III & App IV	
Field Blank 2	8/22/18	1700	G	Water	5
Field Blank 3	8/23/18	1700	G	Water	5
MS/MSD	X	X	X	Water	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input checked="" type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Method of Shipment:			
Relinquished by: <i>Jacob Winsett</i>		Date/Time: 8/24/18 1700		Received by: <i>Sadee</i>	
Relinquished by:		Date/Time:		Received by: <i>Debra V. Jones</i>	
Relinquished by:		Date/Time:		Received by:	
Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

ORIGIN ID:EVVA (812) 477-1176
 BRIAN KLEEMAN
 1149 WEDKING AVENUE
 BUILDING D, SUITE 2
 EVANSVILLE, IN 47715
 UNITED STATES US

TO VERONICA BORTOT
 TESTAMERICA
 301 ALPHA DRIVE

PITTSBURGH PA 15238
 (412) 963-7058
 REF: 170LF00368 AB BROWN CCR GWS

552J1G309/DC45

SHIP DATE: 24AUG18
 ACTWGT: 50.00 LB
 CAD: 106697842/INET4040
 DIMS: 24x12x14 IN
 BILL SENDER

INVT PO: DEPT:



180-81267 Waybill

SATURDAY 12:00P
 PRIORITY OVERNIGHT

MPS# 7730 6204 8306
 0263
 Mstr# 7730 6204 8030

0201

XO AGCA 15238
 PA-US PIT



Uncorrected temp 2.6 °C
 Thermometer ID 9

CF 0 Initials JS

PT-WI-SR-001 effective 7/26/13



FedEx® Saturday Delivery

151966 10/04 MWI

14 MWI

8/24/2018
 10/11/2018

After printing this label:
 1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
 2. Fold the printed page along the horizontal line.
 3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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 Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:EVVA (812) 477-1176
BRIAN KLEEMAN

1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

SHIP DATE: 24AUG18
ACTWGT: 50.00 LB
CAD: 106997842/NET4040
DIMS: 24x12x14 IN

BILL SENDER

TO VERONICA BORTOT
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

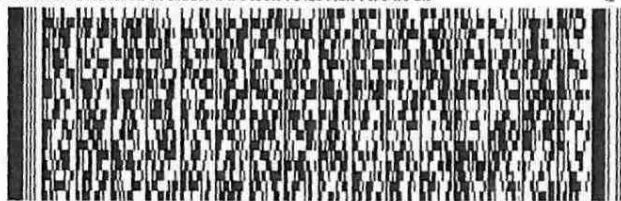
(412) 963-7058
INV.
PO

REF: 170LF00368 AB BROWN CCR GWS

DEPT.

552J18369JCA5

FedEx Ship Manager - Print Your Label(s)



FedEx Express



SATURDAY 12:00P

PRIORITY OVERNIGHT

1 of 2

TRK# 7730 6204 8030

0201

MASTER

X0 AGCA

15238

PIT

Uncorrected temp
Thermometer ID

3.5 °C

9

CF

0

Initials

IS

PT-WI-SR-001 effective 7/26/13

SDR

FedEx Express

S

ay Delivery

151966 10/04 MWI

FedEx Saturday Deliv

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:							
Client Contact:		Bortol, Veronica	Bortol, Veronica		180-340005.1							
Shipping/Receiving		Phone:	E-Mail:	State of Origin:	Page:							
Company:		TestAmerica Laboratories, Inc.	veronica.bortol@testamericainc.com	Indiana	Page 1 of 2							
Address:		Due Date Requested:	Accreditations Required (See note):									
13715 Rider Trail North,		9/7/2018	180-81267-1									
City:		TAT Requested (days):	Analysis Requested									
Earth City												
State, Zip:												
MO, 63045												
Phone:												
314-298-8566(Tel) 314-298-8757(Fax)												
Email:												
Project Name:												
CCR Groundwater Monitoring AB Brown												
Site:												
18016014												
SSOW#:												
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=other)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Standard Target List	9320_Ra228/PreSep_0 Standard Target List	Ra226Ra228_GPPC	Total Number of containers	Special Instructions/Note:
CCR-AP-1R (180-81267-1)	8/22/18	13:55 Eastern	Water	Water		X	X	X	X		2	
CCR-AP-6 (180-81267-2)	8/22/18	14:55 Eastern	Water	Water		X	X	X	X		2	
CCR-AP-7R (180-81267-3)	8/22/18	12:00 Eastern	Water	Water		X	X	X	X		2	
CCR-LF-1 (180-81267-4)	8/22/18	17:30 Eastern	Water	Water		X	X	X	X		2	
CCR-SP-1 (180-81267-5)	8/23/18	10:25 Eastern	Water	Water		X	X	X	X		2	
CCR-SP-2 (180-81267-6)	8/23/18	11:35 Eastern	Water	Water		X	X	X	X		2	
CCR-SP-3 (180-81267-7)	8/23/18	13:00 Eastern	Water	Water		X	X	X	X		2	
BLIND DUPLICATE 3 (180-81267-8)	8/23/18	Eastern	Water	Water		X	X	X	X		2	
FIELD BLANK 2 (180-81267-9)	8/22/18	17:00 Eastern	Water	Water		X	X	X	X		2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/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: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

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

Relinquished by: _____ Date/Time: 8/26/18 1700 Company: TA Pittsburgh

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: _____ Custody Seal No.: _____

Δ Yes Δ No

Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-81267-1

Login Number: 81267

List Number: 1

Creator: Watson, Debbie

List Source: TestAmerica Pittsburgh

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



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-81267-1

Login Number: 81267
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 08/29/18 01:51 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	21.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-81365-1

Client Project/Site: CCR Groundwater Monitoring AB Brown

For:

Vectren Corporation

PO BOX 209

Evansville, Indiana 47702

Attn: Accounts Payable



Authorized for release by:

10/11/2018 1:27:23 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

veronica.bortot@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.

PA Lab ID: 02-00416

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Case Narrative

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Job ID: 180-81365-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative 180-81365-1

Comments

No additional comments.

Receipt

The samples were received on 8/29/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.5° C, 4.7° C and 4.8° C.

GC Semi VOA

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

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.

RAD

Method(s) 904.0, 9320: Radium 228 Prep Batch 160-386885

The following sample exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected. No further action is required.

(MB 160-386885/20-A)

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

Definitions/Glossary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

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.

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)

Accreditation/Certification Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Laboratory: TestAmerica Pittsburgh

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
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-18
Oregon	NELAP	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-19

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	06-30-19
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	09-30-19
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

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

TestAmerica Pittsburgh

Accreditation/Certification Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

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
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 Pittsburgh

Sample Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-81365-1	CCR-BK-1R	Water	08/27/18 13:00	08/29/18 09:00

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Method Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Method	Method Description	Protocol	Laboratory
EPA 9056A	Anions, Ion Chromatography	SW846	TAL PIT
EPA 6020A	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
EPA 9040C	pH	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
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 PIT
7470A	Preparation, Mercury	SW846	TAL PIT
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 PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-81365-1

Date Collected: 08/27/18 13:00

Matrix: Water

Date Received: 08/29/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 9056A Instrument ID: CHICS2000		1			256255	09/08/18 19:23	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255650	08/31/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: A		1			257237	09/18/18 17:28	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	255650	08/31/18 12:19	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020A Instrument ID: M		1	1.0 mL	1.0 mL	257447	09/20/18 04:36	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	255789	09/04/18 07:21	KA	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			255865	09/04/18 16:28	KA	TAL PIT
Total/NA	Analysis	EPA 9040C Instrument ID: NOEQUIP		1			255613	08/31/18 08:59	AVS	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	255529	08/30/18 12:17	RMA	TAL PIT
Total/NA	Prep	PrecSep-21			750.24 mL	1.0 g	386878	09/04/18 09:08	JLC	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			391558	09/27/18 04:29	MAR	TAL SL
Total/NA	Prep	PrecSep_0			750.24 mL	1.0 g	386885	09/04/18 09:55	JLC	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			388835	09/13/18 17:07	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			391721	09/28/18 10:58	RTM	TAL SL

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

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

Lab Chronicle

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Analyst References:

Lab: TAL PIT

Batch Type: Prep

KA = Kayla Kalamasz

NAM = Nicole Marfisi

Batch Type: Analysis

AVS = Abbey Smith

CMR = Carl Reagle

KA = Kayla Kalamasz

RMA = Rachel Aguiar

RSK = Robert Kurtz

WTR = Bill Reinheimer

Lab: TAL SL

Batch Type: Prep

JLC = Jessica Chapman

Batch Type: Analysis

CDR = Conrad Reuscher

MAR = Morgan Reichert

RTM = Rachel Mueller

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Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-81365-1

Date Collected: 08/27/18 13:00

Matrix: Water

Date Received: 08/29/18 09:00

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.9		1.0	0.71	mg/L			09/08/18 19:23	1
Fluoride	0.31		0.10	0.026	mg/L			09/08/18 19:23	1
Sulfate	21		1.0	0.38	mg/L			09/08/18 19:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0011		0.0010	0.00032	mg/L		08/31/18 12:19	09/18/18 17:28	1
Boron	ND		0.080	0.030	mg/L		08/31/18 12:19	09/20/18 04:36	1
Barium	0.041		0.010	0.00037	mg/L		08/31/18 12:19	09/18/18 17:28	1
Calcium	34		0.50	0.12	mg/L		08/31/18 12:19	09/18/18 17:28	1
Cadmium	ND		0.0010	0.00013	mg/L		08/31/18 12:19	09/18/18 17:28	1
Cobalt	0.0010		0.00050	0.000075	mg/L		08/31/18 12:19	09/18/18 17:28	1
Chromium	0.0076		0.0020	0.00063	mg/L		08/31/18 12:19	09/18/18 17:28	1
Molybdenum	0.0013	J	0.0050	0.00047	mg/L		08/31/18 12:19	09/18/18 17:28	1
Lead	0.0011		0.0010	0.000094	mg/L		08/31/18 12:19	09/18/18 17:28	1
Selenium	ND		0.0050	0.00081	mg/L		08/31/18 12:19	09/18/18 17:28	1
Lithium	0.0048	J	0.0050	0.0026	mg/L		08/31/18 12:19	09/18/18 17:28	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		09/04/18 07:21	09/04/18 16:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	220		10	10	mg/L			08/30/18 12:17	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1	0.1	SU			08/31/18 08:59	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.510		0.152	0.158	1.00	0.124	pCi/L	09/04/18 09:08	09/27/18 04:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					09/04/18 09:08	09/27/18 04:29	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.285	U	0.312	0.313	1.00	0.512	pCi/L	09/04/18 09:55	09/13/18 17:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					09/04/18 09:55	09/13/18 17:07	1
Y Carrier	87.1		40 - 110					09/04/18 09:55	09/13/18 17:07	1

TestAmerica Pittsburgh

Client Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Client Sample ID: CCR-BK-1R

Lab Sample ID: 180-81365-1

Date Collected: 08/27/18 13:00

Matrix: Water

Date Received: 08/29/18 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.795		0.347	0.351	5.00	0.512	pCi/L		09/28/18 10:58	1

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QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

Method: EPA 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 180-256255/6
Matrix: Water
Analysis Batch: 256255

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0	0.71	mg/L			09/08/18 07:33	1
Fluoride	ND		0.10	0.026	mg/L			09/08/18 07:33	1
Sulfate	ND		1.0	0.38	mg/L			09/08/18 07:33	1

Lab Sample ID: LCS 180-256255/5
Matrix: Water
Analysis Batch: 256255

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	27.2		mg/L		109	80 - 120
Fluoride	1.25	1.26		mg/L		101	80 - 120
Sulfate	25.0	22.5		mg/L		90	80 - 120

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

Lab Sample ID: MB 180-255650/1-A
Matrix: Water
Analysis Batch: 257237

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00032	mg/L		08/31/18 12:19	09/18/18 16:50	1
Barium	ND		0.010	0.00037	mg/L		08/31/18 12:19	09/18/18 16:50	1
Calcium	ND		0.50	0.12	mg/L		08/31/18 12:19	09/18/18 16:50	1
Cadmium	ND		0.0010	0.00013	mg/L		08/31/18 12:19	09/18/18 16:50	1
Cobalt	ND		0.00050	0.000075	mg/L		08/31/18 12:19	09/18/18 16:50	1
Molybdenum	ND		0.0050	0.00047	mg/L		08/31/18 12:19	09/18/18 16:50	1
Lead	ND		0.0010	0.000094	mg/L		08/31/18 12:19	09/18/18 16:50	1
Selenium	ND		0.0050	0.00081	mg/L		08/31/18 12:19	09/18/18 16:50	1
Lithium	ND		0.0050	0.0026	mg/L		08/31/18 12:19	09/18/18 16:50	1

Lab Sample ID: MB 180-255650/1-A
Matrix: Water
Analysis Batch: 257251

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0020	0.00063	mg/L		08/31/18 12:19	09/19/18 10:34	1

Lab Sample ID: MB 180-255650/1-A
Matrix: Water
Analysis Batch: 257447

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 255650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.080	0.030	mg/L		08/31/18 12:19	09/20/18 03:36	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

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

Lab Sample ID: LCS 180-255650/2-A
Matrix: Water
Analysis Batch: 257237

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.0400	0.0397		mg/L		99	80 - 120
Barium	2.00	2.11		mg/L		105	80 - 120
Calcium	50.0	50.5		mg/L		101	80 - 120
Cadmium	0.0500	0.0542		mg/L		108	80 - 120
Cobalt	0.500	0.502		mg/L		100	80 - 120
Chromium	0.200	0.233		mg/L		116	80 - 120
Molybdenum	1.00	1.05		mg/L		105	80 - 120
Lead	0.0200	0.0208		mg/L		104	80 - 120
Selenium	0.0100	0.0110		mg/L		110	80 - 120
Lithium	0.0500	0.0492		mg/L		98	80 - 120

Lab Sample ID: LCS 180-255650/2-A
Matrix: Water
Analysis Batch: 257447

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 255650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.00	0.864		mg/L		86	80 - 120

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-255789/1-A
Matrix: Water
Analysis Batch: 255865

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 255789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000065	mg/L		09/04/18 07:21	09/04/18 16:00	1

Lab Sample ID: LCS 180-255789/2-A
Matrix: Water
Analysis Batch: 255865

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 255789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00250	0.00243		mg/L		97	80 - 120

Method: EPA 9040C - pH

Lab Sample ID: LCS 180-255613/1
Matrix: Water
Analysis Batch: 255613

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
pH	7.00	7.0		SU		101	99 - 101

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

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

Lab Sample ID: MB 180-255529/2
Matrix: Water
Analysis Batch: 255529

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	ND		10	10	mg/L			08/30/18 12:17	1

Lab Sample ID: LCS 180-255529/1
Matrix: Water
Analysis Batch: 255529

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	494	506		mg/L		102	80 - 120

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-386878/20-A
Matrix: Water
Analysis Batch: 391558

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386878

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.4677		0.197	0.201	1.00	0.195	pCi/L	09/04/18 09:08	09/27/18 04:30	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110					09/04/18 09:08	09/27/18 04:30	1

Lab Sample ID: LCS 160-386878/1-A
Matrix: Water
Analysis Batch: 391559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386878

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	22.7	25.86		2.65	1.00	0.212	pCi/L	114	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	99.1		40 - 110						

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-386885/20-A
Matrix: Water
Analysis Batch: 388835

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386885

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.6653	U	0.382	0.387	1.00	0.807	pCi/L	09/04/18 09:55	09/13/18 17:08	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110					09/04/18 09:55	09/13/18 17:08	1
Y Carrier	88.6		40 - 110					09/04/18 09:55	09/13/18 17:08	1

TestAmerica Pittsburgh

QC Sample Results

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

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

Lab Sample ID: LCS 160-386885/1-A
 Matrix: Water
 Analysis Batch: 388835

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 386885

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	22.0	23.16		2.57	1.00	0.742	pCi/L	105	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	99.1		40 - 110
Y Carrier	87.5		40 - 110

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QC Association Summary

Client: Vectren Corporation
 Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

HPLC/IC

Analysis Batch: 256255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	EPA 9056A	
MB 180-256255/6	Method Blank	Total/NA	Water	EPA 9056A	
LCS 180-256255/5	Lab Control Sample	Total/NA	Water	EPA 9056A	

Metals

Prep Batch: 255650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total Recoverable	Water	3005A	
MB 180-255650/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-255650/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 255789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	7470A	
MB 180-255789/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-255789/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 255865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	EPA 7470A	255789
MB 180-255789/1-A	Method Blank	Total/NA	Water	EPA 7470A	255789
LCS 180-255789/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	255789

Analysis Batch: 257237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total Recoverable	Water	EPA 6020A	255650
MB 180-255650/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	255650
LCS 180-255650/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	255650

Analysis Batch: 257251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-255650/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	255650

Analysis Batch: 257447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total Recoverable	Water	EPA 6020A	255650
MB 180-255650/1-A	Method Blank	Total Recoverable	Water	EPA 6020A	255650
LCS 180-255650/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020A	255650

General Chemistry

Analysis Batch: 255529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	SM 2540C	
MB 180-255529/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-255529/1	Lab Control Sample	Total/NA	Water	SM 2540C	

TestAmerica Pittsburgh

QC Association Summary

Client: Vectren Corporation
Project/Site: CCR Groundwater Monitoring AB Brown

TestAmerica Job ID: 180-81365-1

General Chemistry (Continued)

Analysis Batch: 255613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	EPA 9040C	
LCS 180-255613/1	Lab Control Sample	Total/NA	Water	EPA 9040C	

Rad

Prep Batch: 386878


Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	PrecSep-21	
MB 160-386878/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-386878/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 386885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-81365-1	CCR-BK-1R	Total/NA	Water	PrecSep_0	
MB 160-386885/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-386885/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Chain of Custody Record

Client Information		Sampler: <u>Jacob Winsett</u>		Lab PM: <u>Bortot, Veronica</u>		Carrier Tracking No(s):													
Client Contact: <u>Lisa Messinger</u>		Phone: <u>(812) 228-9422</u>		E-Mail: <u>veronica.bortot@testamericainc.com</u>		COC No: <u>180-46372-8017.2</u>													
Company: <u>Vectren Corporation</u>		Address: <u>PO BOX 209</u>		City: <u>Evansville</u>		Page: <u>Page 2 of 3</u>													
State, Zip: <u>IN, 47702</u>		Phone: <u>864-214-8750(Tel)</u>		Email: <u>lmessinger@vectren.com</u>		Job #: <u>170LF00577</u>													
Project Name: <u>CCR Groundwater Monitoring - AB Brown</u>		Project #: <u>18016014</u>		TAT Requested (days):		Preservation Codes:													
Site: <u>AB Brown Generating Station</u>		SSOW#:		Purchase Order Requested		M - Hexane N - None O - Ash/NaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Z - other (specify)													
<p><i>last sample for this site</i></p>		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=water, BT=Test, A=Air)		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of Containers		Special Instructions/Note:			



180-81365 Chain of Custody

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by: _____ Date: _____
Relinquished by: Jacob Winsett Date/Time: 8/28/18 1900 Company: ATK
Relinquished by: _____ Date/Time: _____ Company: _____
Relinquished by: _____ Date/Time: _____ Company: _____

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:

Cooler Temperature(s) °C and Other Remarks:

BRIAN KLEEMAN
1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

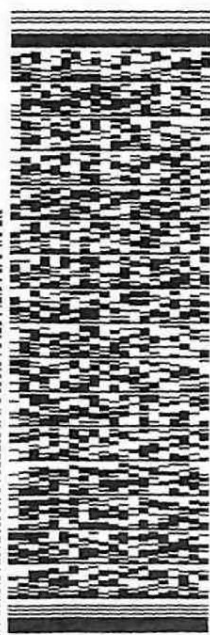
SHIP DATE: 28AUG18
ACTWGT: 55.00 LB
CAD: 106997842/INET4040
DIMS: 24x13x14 IN
BILL SENDER

TO VERONICA BORTOT
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058 REF: 170LF00576

652J1/8309/DCA5



WED - 29 AUG 3:00P
STANDARD OVERNIGHT

MPS# 2 of 3
0263 7730 8703 3785
Mstr# 7730 8703 3980

0201

15238
PA-US
PIT

NA AGCA

31.5 °C
9
B

Uncorrected temp
Thermometer ID

CF 0 Initials B

PT-WI-SR-001 effective 7/26/13



180-81365 Waybill

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ORIGIN ID:EVVA (812) 477-1176
BRIAN KLEEMAN
1149 WEDEKING AVENUE
BUILDING D, SUITE 2
EVANSVILLE, IN 47715
UNITED STATES US

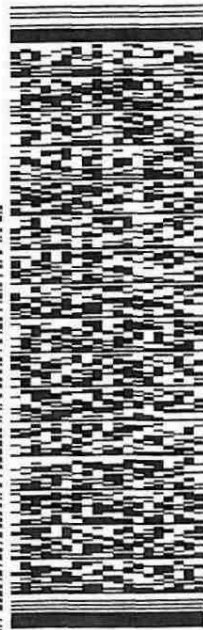
SHIP DATE: 28AUG18
ACTWGT: 55.00 LB
CAD: 106897842/INET 4040
DIMS: 24x13x14 IN
BILL SENDER

TO VERONICA BORTOT
TESTAMERICA
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7056 REF: 170LF00576
INV. PO. DEPT.

5521163091DC/A6



WED - 29 AUG 3:00P
STANDARD OVERNIGHT

1 of 3
TRK# 7730 8703 3980
0201
MASTER

15238
PIT

PA-US

NA AGCA

Uncorrected temp 4.7 °C
Thermometer ID
CF Initials

PT-WI-SR-001 effective 7/26/13

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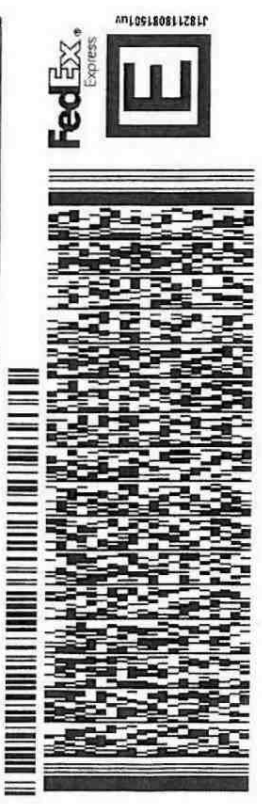
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- 13

ORIGIN ID: EVVA (812) 471-1176
 BRIAN KLEEMAN
 1149 WEDEKING AVENUE
 BUILDING D, SUITE 2
 EVANSVILLE, IN 47715
 UNITED STATES US

TO VERONICA BORTOT
 TESTAMERICA
 301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7058 REF: 170LF00576
 INV. PO. DEPT.



WED - 29 AUG 3:00P
 STANDARD OVERNIGHT

3 of 3
 MPS# 7730 8703 3395
 0263
 Mstr# 7730 8703 3980

NA AGCA 15238
 PA-US PIT



Uncorrected temp 4.8 °C
 Thermometer ID 9
 CF 0 Initials BS

PT-WI-SR-001 effective 7/26/13

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180-81363 Login
 PM: Bortot, Veronica
 Company: Haley & Aldrich, Inc.

CONDITION UPON RECEIPT FORM

Client: Pittsburgh

Initiated by: MH Date: 8/31/18 Time: 0920 Shipper: FE Package Quantity: 10

*Numbered shipping lines correspond to Numbered Cooler and Sample Temp lines

**Sample must be received at < 6° - If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

Shipping #(s):*	Thermometer #:	Package Temp:**	Document #:
1. <u>4241 3108 7970</u>	1. <u>IR</u>	1. <u>21.0</u>	1. _____
2. <u>4241 3108 7958</u>	2. <u>IR</u>	2. <u>21.0</u>	2. _____
3. <u>4241 3108 7947</u>	3. <u>IR</u>	3. <u>21.0</u>	3. _____
4. <u>4241 3108 7980</u>	4. <u>IR</u>	4. <u>21.0</u>	4. _____
5. <u>4241 3108 7925</u>	5. <u>IR</u>	5. <u>21.0</u>	5. _____
6. <u>4241 3108 8005</u>	6. <u>IR</u>	6. <u>21.0</u>	6. _____
7. <u>4241 3108 8010</u>	7. <u>IR</u>	7. <u>21.0</u>	7. _____
8. <u>4241 3108 7936</u>	8. <u>IR</u>	8. <u>21.0</u>	8. _____
9. <u>4241 3108 7991</u>	9. <u>IR</u>	9. <u>21.0</u>	9. _____
10. <u>4241 3108 7969</u>	10. <u>IR</u>	10. <u>21.0</u>	10. _____

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

1. <input checked="" type="checkbox"/> N	Are there custody seals present on the cooler?	8. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Are there custody seals present on bottles?
2. <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> N/A	Do custody seals on cooler appear to be tampered with?	9. <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Do custody seals on bottles appear to be tampered with?
3. <input checked="" type="checkbox"/> N	Were contents of cooler frisked after opening, but before unpacking?	10. <input checked="" type="checkbox"/> <input type="checkbox"/> N/A	Was sample received with proper pH? (If not, make note below) pH strip lot #: <u>80A171</u>
4. <input checked="" type="checkbox"/> N	Sample received with Chain of Custody?	11. <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Containers for Rn-222, C-14, Cl-36, H-3 & I-129/131 marked with "Do Not Preserve" label?
5. <input checked="" type="checkbox"/> N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12. <input checked="" type="checkbox"/> <input type="checkbox"/>	Sample received in proper containers?
6. <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Was sample received broken?	13. <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Headspace in VOA, or Rn-222 liquid samples? (>6mm) (If Yes, note sample ID's below)
7. <input checked="" type="checkbox"/> N	Is sample volume sufficient for analysis?	14. <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Soil containers for C-14, H-3, Tc-99 & I-129/131 marked with "Do Not Dry" label?

¹ For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease, Rn-222 and soils.

Notes: 3.0ML OF HNO3 added to samples; CCR-AD-8

HNO3 (149878)

Sample Labels Applied By: _____

Labels 2nd Reviewed By: _____

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

FOR SAMPLES THAT HAVE pH ADJUSTED, THE FOLLOWING INFORMATION MUST BE INCLUDED: INITIAL AND FINAL pH, pH STRIP LOT #, PRESERVATIVE LOT #, DATE/TIME OF PRESERVATION, AND AMOUNT OF PRESERVATIVE ADDED.

Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-81365-1

Login Number: 81365

List Number: 1

Creator: Watson, Debbie

List Source: TestAmerica Pittsburgh

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



Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-81365-1

Login Number: 81365
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 08/31/18 12:47 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.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	21.0
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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ATTACHMENT 4
Statistical Analyses



HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

15 January 2018
File No. 129420-000

TO: Southern Indiana Gas and Electric Company

FROM: Haley & Aldrich, Inc.

SUBJECT: Summary Appendix III Groundwater Monitoring Results Pursuant to 40 CFR § 257.93 and 40 CFR § 257.94, A.B. Brown Generating Station

The Southern Indiana Gas and Electric Company (SIGECO) is implementing the 17 April 2015 U.S. Environmental Protection Agency (U.S. EPA) Federal Coal Combustion Residuals (CCR) Rule (40 CFR § 257 and 261) for the A.B. Brown Generating Station, located in Posey County, Indiana. SIGECO provided Haley & Aldrich with groundwater monitoring data collected from a groundwater monitoring system that meets the requirements of 40 CFR §257.91. This memorandum documents the results of statistical tests conducted to determine if Appendix III groundwater monitoring constituents detected in downgradient wells are at levels that exhibit a statistically significant increase above background or upgradient wells consistent with the requirements in 40 CFR § 257.94.

Collection dates of groundwater samples from the CCR Unit span from June 2016 through November 2017. The data satisfy the CCR Rule requirement of collecting a minimum of 8 rounds of hydrological and groundwater quality data from upgradient wells. The Upper Tolerance Limit (UTL) statistical analysis was used as specified in the certification statement of October 17, 2017. The UTL is an accepted method under the CCR Rule, and is the upper endpoint of a tolerance interval that is designed to contain a pre-specified proportion (e.g. 95 percent) of the background dataset.

Data from the most recent sample event from the down-gradient monitoring wells for each of the three units were compared to the UTL calculated from the background data. Based on these comparisons, the following results are indicated:

Ash Pond: boron, calcium, chloride, fluoride, sulfate, and total dissolved solids from one or more downgradient sample(s) indicated a statistically significant increase above background;

Landfill: boron, calcium, chloride, fluoride, sulfate, and total dissolved solids from one or more downgradient sample(s) indicated a statistically significant increase above background; and

Sedimentation Pond: boron, calcium, chloride, fluoride, sulfate, and total dissolved solids from one or more downgradient sample(s) indicated a statistically significant increase above background.

**Table 1: Statistical Determination of Background Water Quality
Vectren A.B. Brown**

Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (pH units)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Background							
CCR-BK-1/1R							
8/11/2016	ND	36	2.1	0.35	7.4	24	220
10/27/2016	ND	41	2.4	0.35	7.5	26	210
11/7/2016	ND	38	1.5	0.32	7	21	220
12/6/2016	ND	36	2.3	0.35	6.9	26	200
2/7/2017	ND	34	2.3	0.3	7.2	27	230
4/7/2017	0.019	35	2.7	0.38	7.2	28	250
6/6/2017	0.026	34	2.1	0.3	7.1	25	270
9/28/2017	0.015	35	2.2	0.35	7.1	25	210
11/16/2017	0.041	39	2.6	0.3	7.8	26	210
CCR-BK-2							
6/8/2016	0.018	53	12	0.2	7.09	61	360
8/10/2016	ND	39	17	0.14	7.1	30	260
10/27/2016	ND	46	17	0.16	6.8	28	350
12/6/2016	ND	36	19	0.2	6.7	26	260
2/10/2017	ND	34	12	0.14	8.5	25	230
4/5/2017	ND	45	19	0.16	7.2	29	240
6/6/2017	0.021	37	14	0.13	7	27	270
9/27/2017	0.018	37	19	0.13	6.8	24	320
11/16/2017	0.02	35	19	0.13	7.3	23	250
Data Distribution	Non-Parametric	Non-Parametric	Non-Parametric	Non-Parametric	Non-Parametric	Non-Parametric	Parametric
95% Upper Tolerance Limit	0.08	53	19	0.38	8.5	61	338
Minimum Detection	0.015	34	1.5	0.13	6.7	21	200
Maximum Detection	0.041	53	19	0.38	8.5	61	360
Maximum Reporting Limit	0.08	NA	NA	NA	NA	NA	NA
Mean Detection	0.022	38	9.3	0.24	7.2	28	253
Frequency of Detection	44%	100%	100%	100%	100%	100%	100%

ABBREVIATIONS AND NOTES:

CCR: Coal Combustion Residuals
mg/L: milligram per liter
NA: Not Applicable
ND: Not Detected

**Table 2: Comparison of Downgradient Wells to Background Water Quality
Vectren A.B. Brown**

	Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (pH units)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Ash Pond								
CCR-AP-1/1R	11/14/2017	7.6	270	430	0.2	7.8	2100	4200
CCR-AP-2/2R	11/15/2017	12	350	760	0.27	7.5	3900	6000
CCR-AP-3/3R	11/15/2017	13	420	980	0.72	7.5	5300	8000
CCR-AP-4/4R	11/14/2017	0.15	110	22	0.41	7.7	140	650
CCR-AP-5	11/15/2017	11	310	360	0.32	8	3100	4800
CCR-AP-6	11/16/2017	0.59	240	100	0.21	7.4	880	1700
CCR-AP-7/7R	11/14/2017	2.8	320	280	0.094	7.2	2400	3900
Landfill								
CCR-LF-1	11/16/2017	0.12	260	16	0.27	7.5	1100	1800
CCR-LF-2	11/14/2017	5	380	350	ND	7.2	15000	21000
CCR-LF-3	11/14/2017	0.039	200	70	0.18	7.7	1100	1900
CCR-LF-4	11/16/2017	0.22	440	130	ND	7.5	8600	11000
CCR-LF-5	11/14/2017	0.86	430	270	0.12	7.5	2700	4300
CCR-LF-6	11/14/2017	0.59	210	50	0.42	7.6	720	1400
Sedimentation Pond								
CCR-SP-1	11/15/2017	0.033	150	74	0.28	7.4	220	820
CCR-SP-2	11/15/2017	0.24	180	73	0.31	7.4	460	1100
CCR-SP-3	11/15/2017	0.019	86	4.1	0.41	7.6	0.63	370

ABBREVIATIONS AND NOTES:

CCR: Coal Combustion Residuals

mg/L: milligram per liter

ND: Not Detected

Shaded cells indicate and exceedance of the 95% Upper Tolerance Limit.