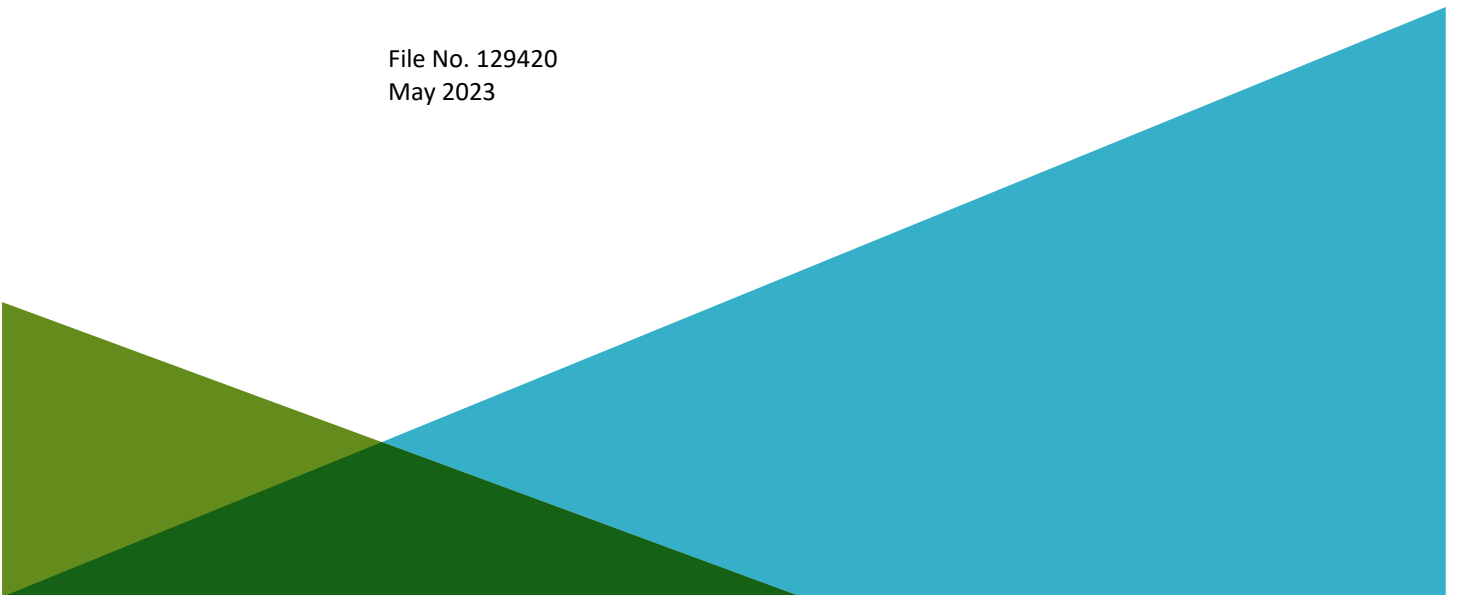


2017 ANNUAL GROUNDWATER MONITORING AND  
CORRECTIVE ACTION REPORT ADDENDUM  
LANDFILL  
A.B. BROWN GENERATING STATION  
POSEY COUNTY, INDIANA

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:** 2017 Annual Groundwater Monitoring and Corrective Action Report Addendum  
Southern Indiana Gas and Electric Company  
Landfill  
A.B. Brown Generating Station; Posey County, Indiana

The Landfill 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 2017 for the Landfill was completed and placed in the facilities operating record on 31 January 2018, 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 2017
- Water table configuration map – November 2017

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.

G:\129420 Vectren\Deliverables\AB\_Brown\Annual Report\2018\Landfill\Addendum for EPA\2023-0515\_ABB Landfill 2017 Annual Report Addendum\_F.docx

**ATTACHMENT 1**  
**Groundwater Gauging Data**

**VECTREN - AB BROWN STATION**

Groundwater Sampling Event

Gauging Date: June 5-7, 2017

ATC Project No. 170LF00368

<b>WELL ID</b>	<b>GAUGE DATE</b>	<b>DTW FROM TOC</b>
CCR-AP-1R	6/5/2017	17.69
CCR-AP-2R	6/6/2017	37.56
CCR-AP-3R	6/6/2017	40.57
CCR-AP-4R	6/5/2017	34.73
CCR-AP-5	6/6/2017	37.71
CCR-AP-6	6/5/2017	15.52
CCR-AP-7R	6/5/2017	34.25
CCR-LF-1	6/7/2017	10.88
CCR-LF-2	6/7/2017	26.50
CCR-LF-3	6/6/2017	28.52
CCR-LF-4	6/6/2017	48.83
CCR-LF-5	6/6/2017	21.60
CCR-LF-6	6/6/2017	7.82
CCR-SP-1	6/5/2017	9.85
CCR-SP-2	6/5/2017	9.68
CCR-SP-3	6/5/2017	7.47
CCR-BK-1R	6/6/2017	dry at 58' (top of pump)
CCR-BK-2	6/6/2017	16.66

DTW= Depth to Water

TOC= Top of Casing

**VECTREN - AB BROWN STATION**

Groundwater Sampling Event

Gauging Date: November 14-16, 2017

ATC Project No. 170LF00368

<b>WELL ID</b>	<b>GAUGE DATE</b>	<b>DTW FROM TOC</b>
CCR-AP-1R	11/14/2017	15.85
CCR-AP-2R	11/15/2017	44.06
CCR-AP-3R	11/15/2017	39.27
CCR-AP-4R	11/14/2017	35.89
CCR-AP-5	11/15/2017	36.70
CCR-AP-6	11/16/2017	18.21
CCR-AP-7R	11/14/2017	35.83
CCR-LF-1	11/16/2017	12.71
CCR-LF-2	11/14/2017	27.35
CCR-LF-3	11/14/2017	29.83
CCR-LF-4	11/16/2017	48.80
CCR-LF-5	11/14/2017	22.12
CCR-LF-6	11/14/2017	7.87
CCR-SP-1	11/15/2017	10.25
CCR-SP-2	11/15/2017	9.82
CCR-SP-3	11/15/2017	9.56
CCR-BK-1R	11/16/2017	dry to top of pump
CCR-BK-2	11/16/2017	24.48

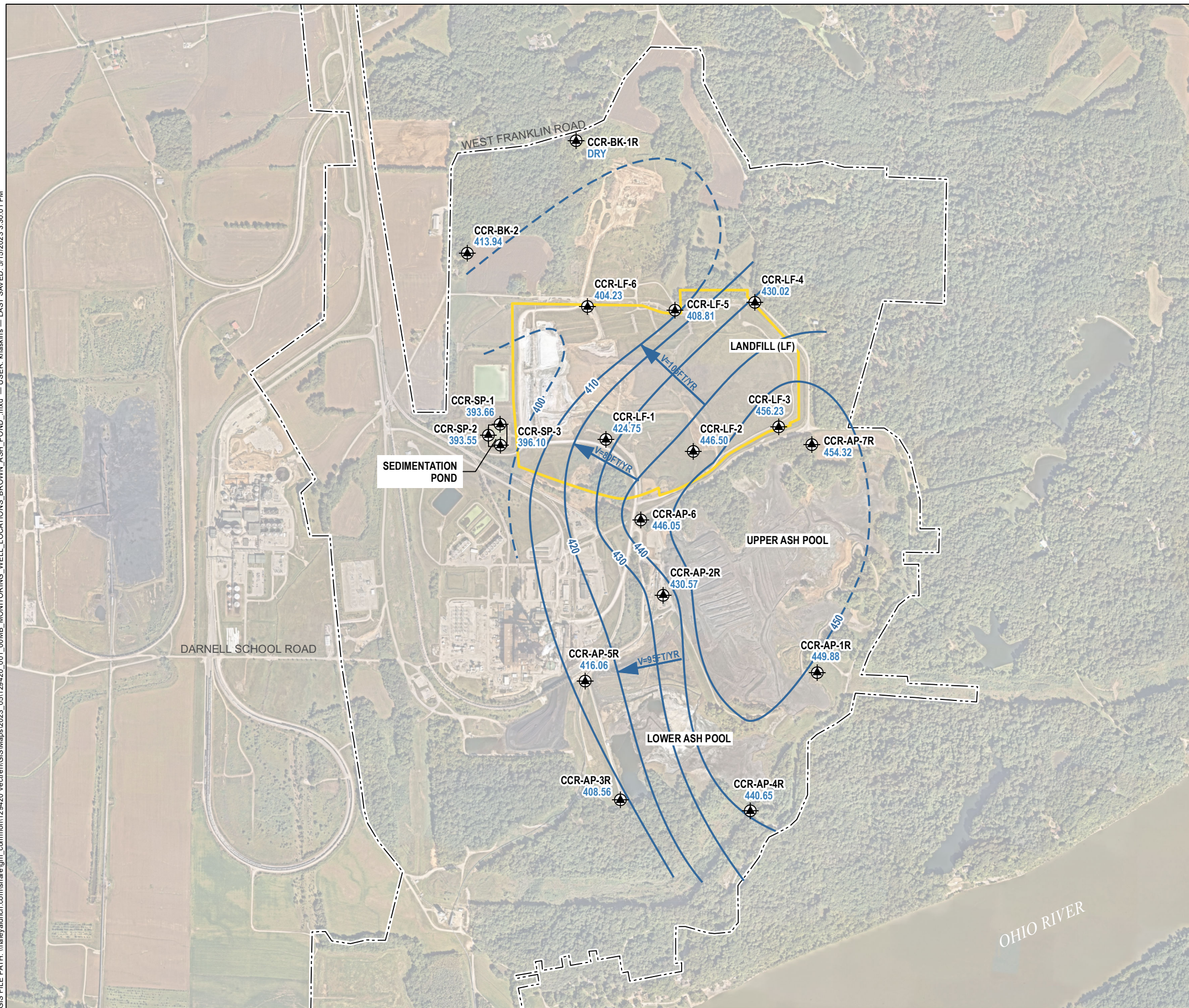
DTW= Depth to Water

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\_Vectren\GIS\Maps\2023\_05\129420\_001\_001\ME\_MONITORING\_WELL\_LOCATIONS\_BROWN\_ASH\_POND.mxd — USER: khaskins — LAST SAVED: 5/15/2023 3:30:01 PM

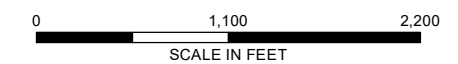


**LEGEND**

- CCR MONITORING 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 5 JUNE 2017 THROUGH 7 JUNE 2017.
  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<sub>e</sub> = 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

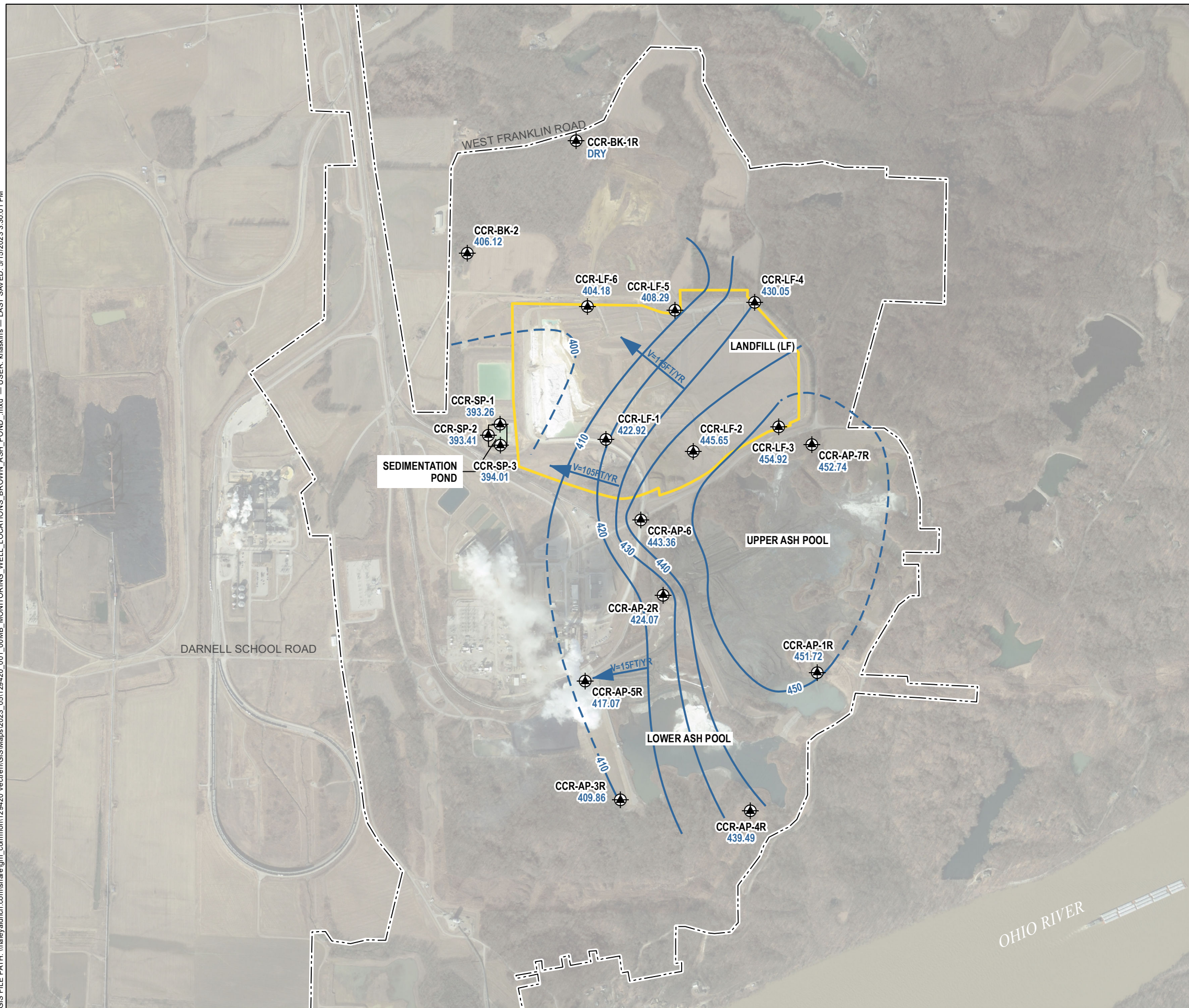
**SHALLOW GROUNDWATER ELEVATION CONTOURS - JUNE 2017**

JULY 2017

FIGURE 1



GIS FILE PATH: \\haleyaldrich.com\share\grn\_common\129420\_Vectrent\GIS\Maps\2023\_05\129420\_001\_001\ME\_MONITORING\_WELL\_LOCATIONS\_BROWN\_ASH\_POND.mxd — USER: khaskins — LAST SAVED: 5/15/2023 3:30:01 PM

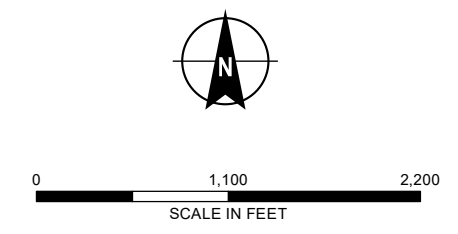


**LEGEND**

- CCR MONITORING 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 14 NOVEMBER 2017 THROUGH 16 NOVEMBER 2017.
  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<sub>e</sub> = 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 - NOVEMBER 2017**

DECEMBER 2017

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: 180-72643-2

Client Project/Site: CCR Groundwater Monitoring ABBrown

For:

Vectren Corporation

PO BOX 209

Evansville, Indiana 47702

Attn: Lisa Messinger



Authorized for release by:

12/20/2017 2:38:41 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://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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# Case Narrative

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Job ID: 180-72643-2**

**Laboratory: TestAmerica Pittsburgh**

## Narrative

**Job Narrative  
180-72643-2**

### Comments

No additional comments.

### Receipt

The samples were received on 11/18/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.1° C, 1.4° C, 2.9° C, 3.1° C, 3.5° C and 4.2° C.

### Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. There is no collection time on the COC for the following sample; DUP -1, therefore 11/16/17 was given in order to add the analysis for this sample.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): CCR LF-5 (180-72643-5). The container labels list 15:45 for the collection time, while the COC lists 15:30. The time on the COC was used.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): CCR LF-6 (180-72643-6). The container labels list 16:45 for the collection time, while the COC lists 17:00. The time on the COC was used.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): FIELD BLANK 3 (180-72643-13). The container labels list the collection date as 11/16/17, while the COC lists a date of 11/15/17. The date on the COC was used.

### RAD

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-338699  
Sample reduced due to the sample being gray in color and murky.

DUP 1 (180-72643-24)

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-338699  
Sample reduced due to the sample being light orange in color and murky.

CCR-BK-2 (180-72643-22)

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-338699  
A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: Accidentally added 2mL of barium carrier to the following sample.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-338693  
Sample reduced due to it being murky and light orange in color

CCR-BK-2 (180-72643-22)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-338693  
Sample reduced due to the sample being gray in color and murky.

DUP 1 (180-72643-24)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-338693  
A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: Accidentally added 2mL of barium carrier to the following sample.

# Case Narrative

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

---

## Job ID: 180-72643-2 (Continued)

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### Laboratory: TestAmerica Pittsburgh (Continued)

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

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# Definitions/Glossary

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Qualifiers

### Rad

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	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 ABBrown

TestAmerica Job ID: 180-72643-2

## 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
A2LA	A2LA		PA00164	07-31-18
Arkansas DEQ	State Program	6	88-0690	06-27-18
California	State Program	9	2891	03-31-18
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-18
Illinois	NELAP	5	200005	06-30-18
Kansas	NELAP	7	E-10350	01-31-18
Louisiana	NELAP	6	04041	06-30-18
Nevada	State Program	9	PA00164	07-31-18
New Hampshire	NELAP	1	2030	04-04-18
New Jersey	NELAP	2	PA005	06-30-18
New York	NELAP	2	11182	03-31-18
North Carolina (WW/SW)	State Program	4	434	12-31-17
Pennsylvania	NELAP	3	02-00416	04-30-18
South Carolina	State Program	4	89014	04-30-18
Texas	NELAP	6	T104704528-15-2	03-31-18
US Fish & Wildlife	Federal		LE94312A-1	07-31-18
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-18
Virginia	NELAP	3	460189	09-14-18
West Virginia DEP	State Program	3	142	01-31-18
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	06-30-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	12-31-17 *
Kentucky (DW)	State Program	4	90125	12-31-17 *
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA170011	12-31-17 *
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-21-18 *
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20

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

TestAmerica Pittsburgh



# Accreditation/Certification Summary

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## 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
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18

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# Sample Summary

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-72643-1	CCR-LF-1	Water	11/16/17 12:00	11/18/17 09:00
180-72643-2	CCR LF-2	Water	11/14/17 13:50	11/18/17 09:00
180-72643-3	CCR LF-3	Water	11/14/17 12:15	11/18/17 09:00
180-72643-4	CCR LF-4	Water	11/16/17 14:30	11/18/17 09:00
180-72643-5	CCR LF-5	Water	11/14/17 15:30	11/18/17 09:00
180-72643-6	CCR LF-6	Water	11/14/17 17:00	11/18/17 09:00
180-72643-7	CCR SP-1	Water	11/15/17 12:15	11/18/17 09:00
180-72643-8	CCR SP-2	Water	11/15/17 13:30	11/18/17 09:00
180-72643-9	CCR SP-3	Water	11/15/17 15:00	11/18/17 09:00
180-72643-10	DUP 2	Water	11/16/17 00:00	11/18/17 09:00
180-72643-11	DUP 3	Water	11/15/17 00:00	11/18/17 09:00
180-72643-12	FIELD BLANK 2	Water	11/14/17 17:00	11/18/17 09:00
180-72643-13	FIELD BLANK 3	Water	11/15/17 15:00	11/18/17 09:00
180-72643-14	CCR-AP-1R	Water	11/14/17 15:35	11/18/17 09:00
180-72643-15	CCR-AP-2R	Water	11/15/17 16:00	11/18/17 09:00
180-72643-16	CCR-AP-3R	Water	11/15/17 12:55	11/18/17 09:00
180-72643-17	CCR-AP-4R	Water	11/14/17 12:30	11/18/17 09:00
180-72643-18	CCR-AP-5	Water	11/15/17 14:40	11/18/17 09:00
180-72643-19	CCR-AP-6	Water	11/16/17 10:45	11/18/17 09:00
180-72643-20	CCR-AP-7R	Water	11/14/17 16:40	11/18/17 09:00
180-72643-21	CCR-BK-1R	Water	11/16/17 13:15	11/18/17 09:00
180-72643-22	CCR-BK-2	Water	11/16/17 15:40	11/18/17 09:00
180-72643-23	FB 1	Water	11/16/17 15:40	11/18/17 09:00
180-72643-24	DUP 1	Water	11/16/17 00:00	11/18/17 09:00

# Method Summary

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.  
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

**Laboratory References:**

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



# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-LF-1**  
**Date Collected: 11/16/17 12:00**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.67 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:56	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.67 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:02	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR LF-2**  
**Date Collected: 11/14/17 13:50**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.46 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:56	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.46 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:02	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR LF-3**  
**Date Collected: 11/14/17 12:15**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-3**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.19 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:56	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.19 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:03	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR LF-4**  
**Date Collected: 11/16/17 14:30**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR LF-4**

**Lab Sample ID: 180-72643-4**

**Date Collected: 11/16/17 14:30**

**Matrix: Water**

**Date Received: 11/18/17 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	9315		1			341752	12/13/17 09:57	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:04	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR LF-5**

**Lab Sample ID: 180-72643-5**

**Date Collected: 11/14/17 15:30**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:57	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:04	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR LF-6**

**Lab Sample ID: 180-72643-6**

**Date Collected: 11/14/17 17:00**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			999.92 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:57	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.92 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:04	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR SP-1**

**Lab Sample ID: 180-72643-7**

**Date Collected: 11/15/17 12:15**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			999.86 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: CCR SP-1

## Lab Sample ID: 180-72643-7

Date Collected: 11/15/17 12:15

Matrix: Water

Date Received: 11/18/17 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	9315		1			341752	12/13/17 09:57	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.86 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:04	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: CCR SP-2

## Lab Sample ID: 180-72643-8

Date Collected: 11/15/17 13:30

Matrix: Water

Date Received: 11/18/17 09:00

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			999.95 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:57	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.95 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:04	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: CCR SP-3

## Lab Sample ID: 180-72643-9

Date Collected: 11/15/17 15:00

Matrix: Water

Date Received: 11/18/17 09:00

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			1000.16 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341752	12/13/17 09:57	RTM	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.16 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:04	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: DUP 2

## Lab Sample ID: 180-72643-10

Date Collected: 11/16/17 00:00

Matrix: Water

Date Received: 11/18/17 09:00

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			999.20 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: DUP 2

## Lab Sample ID: 180-72643-10

Date Collected: 11/16/17 00:00

Matrix: Water

Date Received: 11/18/17 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	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.20 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:05	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: DUP 3

## Lab Sample ID: 180-72643-11

Date Collected: 11/15/17 00:00

Matrix: Water

Date Received: 11/18/17 09:00

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			999.26 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.26 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:05	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: FIELD BLANK 2

## Lab Sample ID: 180-72643-12

Date Collected: 11/14/17 17:00

Matrix: Water

Date Received: 11/18/17 09:00

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			1000.61 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.61 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339728	11/29/17 17:05	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: FIELD BLANK 3

## Lab Sample ID: 180-72643-13

Date Collected: 11/15/17 15:00

Matrix: Water

Date Received: 11/18/17 09:00

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			999.58 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: FIELD BLANK 3

## Lab Sample ID: 180-72643-13

Date Collected: 11/15/17 15:00

Matrix: Water

Date Received: 11/18/17 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	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.58 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:07	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: CCR-AP-1R

## Lab Sample ID: 180-72643-14

Date Collected: 11/14/17 15:35

Matrix: Water

Date Received: 11/18/17 09:00

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			1000.54 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.54 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:08	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: CCR-AP-2R

## Lab Sample ID: 180-72643-15

Date Collected: 11/15/17 16:00

Matrix: Water

Date Received: 11/18/17 09:00

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			999.92 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.92 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:08	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

## Client Sample ID: CCR-AP-3R

## Lab Sample ID: 180-72643-16

Date Collected: 11/15/17 12:55

Matrix: Water

Date Received: 11/18/17 09:00

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			1000.97 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL

TestAmerica Pittsburgh



# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-AP-3R**

**Lab Sample ID: 180-72643-16**

**Date Collected: 11/15/17 12:55**

**Matrix: Water**

**Date Received: 11/18/17 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	9315		1			341750	12/13/17 10:01	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.97 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:08	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR-AP-4R**

**Lab Sample ID: 180-72643-17**

**Date Collected: 11/14/17 12:30**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			1000.72 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:02	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.72 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:08	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR-AP-5**

**Lab Sample ID: 180-72643-18**

**Date Collected: 11/15/17 14:40**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			1000.62 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:02	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.62 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:08	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR-AP-6**

**Lab Sample ID: 180-72643-19**

**Date Collected: 11/16/17 10:45**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			999.12 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-AP-6**

**Lab Sample ID: 180-72643-19**

**Date Collected: 11/16/17 10:45**

**Matrix: Water**

**Date Received: 11/18/17 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	9315		1			341750	12/13/17 10:02	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.12 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:08	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR-AP-7R**

**Lab Sample ID: 180-72643-20**

**Date Collected: 11/14/17 16:40**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			999.45 mL	1.0 g	338524	11/21/17 14:53	SJC	TAL SL
Total/NA	Analysis	9315		1			341750	12/13/17 10:02	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.45 mL	1.0 g	338540	11/21/17 15:34	SJC	TAL SL
Total/NA	Analysis	9320		1			339727	11/29/17 17:09	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR-BK-1R**

**Lab Sample ID: 180-72643-21**

**Date Collected: 11/16/17 13:15**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			999.85 mL	1.0 g	338693	11/22/17 09:27	SJC	TAL SL
Total/NA	Analysis	9315		1			342590	12/18/17 06:00	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.85 mL	1.0 g	338699	11/22/17 10:10	SJC	TAL SL
Total/NA	Analysis	9320		1			339951	11/30/17 16:11	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: CCR-BK-2**

**Lab Sample ID: 180-72643-22**

**Date Collected: 11/16/17 15:40**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			749.44 mL	1.0 g	338693	11/22/17 09:27	SJC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-BK-2**

**Lab Sample ID: 180-72643-22**

**Date Collected: 11/16/17 15:40**

**Matrix: Water**

**Date Received: 11/18/17 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	9315		1			342590	12/18/17 06:00	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			749.44 mL	1.0 g	338699	11/22/17 10:10	SJC	TAL SL
Total/NA	Analysis	9320		1			339951	11/30/17 16:11	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB 1**

**Lab Sample ID: 180-72643-23**

**Date Collected: 11/16/17 15:40**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

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			999.30 mL	1.0 g	338693	11/22/17 09:27	SJC	TAL SL
Total/NA	Analysis	9315		1			342590	12/18/17 06:00	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.30 mL	1.0 g	338699	11/22/17 10:10	SJC	TAL SL
Total/NA	Analysis	9320		1			339951	11/30/17 16:12	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: DUP 1**

**Lab Sample ID: 180-72643-24**

**Date Collected: 11/16/17 00:00**

**Matrix: Water**

**Date Received: 11/18/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.03 mL	1.0 g	338693	11/22/17 09:27	SJC	TAL SL
Total/NA	Analysis	9315		1			342590	12/18/17 06:00	RTM	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			750.03 mL	1.0 g	338699	11/22/17 10:10	SJC	TAL SL
Total/NA	Analysis	9320		1	1.0 mL	1.0 mL	339951	11/30/17 16:12	CDR	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			342836	12/19/17 08:52	RTM	TAL SL
Instrument ID: NOEQUIP										

**Laboratory References:**

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 ABBrown

TestAmerica Job ID: 180-72643-2

## Analyst References:

Lab: TAL SL

Batch Type: Prep

SJC = Sarah Cooper

Batch Type: Analysis

CDR = Conrad Reuscher

RTM = Rachel Mueller

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# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-LF-1**

**Date Collected: 11/16/17 12:00**

**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-1**

**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.450		0.115	0.122	1.00	0.0792	pCi/L	11/21/17 14:53	12/13/17 09:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					11/21/17 14:53	12/13/17 09:56	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.622		0.279	0.285	1.00	0.401	pCi/L	11/21/17 15:34	11/29/17 17:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					11/21/17 15:34	11/29/17 17:02	1
Y Carrier	74.4		40 - 110					11/21/17 15:34	11/29/17 17:02	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	1.07		0.302	0.310	5.00	0.401	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR LF-2**

**Date Collected: 11/14/17 13:50**

**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-2**

**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.465		0.114	0.122	1.00	0.0734	pCi/L	11/21/17 14:53	12/13/17 09:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					11/21/17 14:53	12/13/17 09:56	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.84		0.341	0.381	1.00	0.350	pCi/L	11/21/17 15:34	11/29/17 17:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					11/21/17 15:34	11/29/17 17:02	1
Y Carrier	77.0		40 - 110					11/21/17 15:34	11/29/17 17:02	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR LF-2**

Date Collected: 11/14/17 13:50

Date Received: 11/18/17 09:00

**Lab Sample ID: 180-72643-2**

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	2.31		0.360	0.400	5.00	0.350	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR LF-3**

Date Collected: 11/14/17 12:15

Date Received: 11/18/17 09:00

**Lab Sample ID: 180-72643-3**

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0670	U	0.0516	0.0519	1.00	0.0708	pCi/L	11/21/17 14:53	12/13/17 09:56	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 14:53	12/13/17 09:56	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.590		0.249	0.255	1.00	0.350	pCi/L	11/21/17 15:34	11/29/17 17:03	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 15:34	11/29/17 17:03	1
Y Carrier	77.8		40 - 110					11/21/17 15:34	11/29/17 17:03	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	0.657		0.254	0.260	5.00	0.350	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR LF-4**

Date Collected: 11/16/17 14:30

Date Received: 11/18/17 09:00

**Lab Sample ID: 180-72643-4**

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.22		0.289	0.409	1.00	0.0772	pCi/L	11/21/17 14:53	12/13/17 09:57	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.9		40 - 110					11/21/17 14:53	12/13/17 09:57	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR LF-4**

**Lab Sample ID: 180-72643-4**

Date Collected: 11/16/17 14:30

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.35		0.323	0.346	1.00	0.379	pCi/L	11/21/17 15:34	11/29/17 17:04	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.9		40 - 110					11/21/17 15:34	11/29/17 17:04	1
Y Carrier	77.0		40 - 110					11/21/17 15:34	11/29/17 17:04	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	4.58		0.433	0.536	5.00	0.379	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR LF-5**

**Lab Sample ID: 180-72643-5**

Date Collected: 11/14/17 15:30

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.135		0.0659	0.0670	1.00	0.0709	pCi/L	11/21/17 14:53	12/13/17 09:57	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 14:53	12/13/17 09:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.222	U	0.218	0.219	1.00	0.352	pCi/L	11/21/17 15:34	11/29/17 17:04	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 15:34	11/29/17 17:04	1
Y Carrier	73.6		40 - 110					11/21/17 15:34	11/29/17 17:04	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	0.357		0.228	0.229	5.00	0.352	pCi/L		12/19/17 08:52	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR LF-6**

**Lab Sample ID: 180-72643-6**

Date Collected: 11/14/17 17:00

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.131		0.0681	0.0691	1.00	0.0777	pCi/L	11/21/17 14:53	12/13/17 09:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					11/21/17 14:53	12/13/17 09:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.296	U	0.219	0.221	1.00	0.341	pCi/L	11/21/17 15:34	11/29/17 17:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					11/21/17 15:34	11/29/17 17:04	1
Y Carrier	79.3		40 - 110					11/21/17 15:34	11/29/17 17:04	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	0.426		0.229	0.232	5.00	0.341	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR SP-1**

**Lab Sample ID: 180-72643-7**

Date Collected: 11/15/17 12:15

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.165		0.0725	0.0740	1.00	0.0716	pCi/L	11/21/17 14:53	12/13/17 09:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					11/21/17 14:53	12/13/17 09:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.350	U	0.242	0.244	1.00	0.374	pCi/L	11/21/17 15:34	11/29/17 17:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					11/21/17 15:34	11/29/17 17:04	1
Y Carrier	77.8		40 - 110					11/21/17 15:34	11/29/17 17:04	1

TestAmerica Pittsburgh



# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: CCR SP-1

Date Collected: 11/15/17 12:15

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-7

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	0.514		0.253	0.255	5.00	0.374	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR SP-2

Date Collected: 11/15/17 13:30

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-8

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.242		0.0926	0.0951	1.00	0.0957	pCi/L	11/21/17 14:53	12/13/17 09:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.9		40 - 110					11/21/17 14:53	12/13/17 09:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.405	U	0.283	0.285	1.00	0.442	pCi/L	11/21/17 15:34	11/29/17 17:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.9		40 - 110					11/21/17 15:34	11/29/17 17:04	1
Y Carrier	77.4		40 - 110					11/21/17 15:34	11/29/17 17:04	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	0.647		0.298	0.300	5.00	0.442	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR SP-3

Date Collected: 11/15/17 15:00

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-9

Matrix: Water

### 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		0.0666	0.0675	1.00	0.0767	pCi/L	11/21/17 14:53	12/13/17 09:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					11/21/17 14:53	12/13/17 09:57	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: CCR SP-3

Date Collected: 11/15/17 15:00

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-9

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	0.293	U	0.228	0.230	1.00	0.359	pCi/L	11/21/17 15:34	11/29/17 17:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					11/21/17 15:34	11/29/17 17:04	1
Y Carrier	78.9		40 - 110					11/21/17 15:34	11/29/17 17:04	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	0.416		0.238	0.240	5.00	0.359	pCi/L		12/19/17 08:52	1

## Client Sample ID: DUP 2

Date Collected: 11/16/17 00:00

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-10

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.312		0.0925	0.0967	1.00	0.0689	pCi/L	11/21/17 14:53	12/13/17 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					11/21/17 14:53	12/13/17 10:01	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	0.212	0.213	1.00	0.348	pCi/L	11/21/17 15:34	11/29/17 17:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					11/21/17 15:34	11/29/17 17:05	1
Y Carrier	79.3		40 - 110					11/21/17 15:34	11/29/17 17:05	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	0.504		0.231	0.234	5.00	0.348	pCi/L		12/19/17 08:52	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: DUP 3**  
**Date Collected: 11/15/17 00:00**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-11**  
**Matrix: Water**

**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		0.0730	0.0745	1.00	0.0786	pCi/L	11/21/17 14:53	12/13/17 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					11/21/17 14:53	12/13/17 10:01	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	0.206	0.207	1.00	0.319	pCi/L	11/21/17 15:34	11/29/17 17:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					11/21/17 15:34	11/29/17 17:05	1
Y Carrier	79.3		40 - 110					11/21/17 15:34	11/29/17 17:05	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	0.442		0.219	0.220	5.00	0.319	pCi/L		12/19/17 08:52	1

**Client Sample ID: FIELD BLANK 2**  
**Date Collected: 11/14/17 17:00**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-12**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0396	U	0.0478	0.0479	1.00	0.0781	pCi/L	11/21/17 14:53	12/13/17 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					11/21/17 14:53	12/13/17 10:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0712	U	0.228	0.228	1.00	0.395	pCi/L	11/21/17 15:34	11/29/17 17:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					11/21/17 15:34	11/29/17 17:05	1
Y Carrier	78.9		40 - 110					11/21/17 15:34	11/29/17 17:05	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: FIELD BLANK 2

Date Collected: 11/14/17 17:00

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-12

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	0.111	U	0.233	0.233	5.00	0.395	pCi/L		12/19/17 08:52	1

## Client Sample ID: FIELD BLANK 3

Date Collected: 11/15/17 15:00

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-13

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0292	U	0.0519	0.0520	1.00	0.0916	pCi/L	11/21/17 14:53	12/13/17 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					11/21/17 14:53	12/13/17 10:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.124	U	0.220	0.221	1.00	0.374	pCi/L	11/21/17 15:34	11/29/17 17:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					11/21/17 15:34	11/29/17 17:07	1
Y Carrier	76.6		40 - 110					11/21/17 15:34	11/29/17 17:07	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	0.153	U	0.226	0.227	5.00	0.374	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR-AP-1R

Date Collected: 11/14/17 15:35

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-14

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.256		0.0828	0.0859	1.00	0.0637	pCi/L	11/21/17 14:53	12/13/17 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					11/21/17 14:53	12/13/17 10:01	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: CCR-AP-1R

Date Collected: 11/14/17 15:35

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-14

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	0.594		0.237	0.243	1.00	0.326	pCi/L	11/21/17 15:34	11/29/17 17:08	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 15:34	11/29/17 17:08	1
Y Carrier	82.6		40 - 110					11/21/17 15:34	11/29/17 17:08	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	0.849		0.251	0.258	5.00	0.326	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR-AP-2R

Date Collected: 11/15/17 16:00

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-15

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217		0.0789	0.0813	1.00	0.0712	pCi/L	11/21/17 14:53	12/13/17 10:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 14:53	12/13/17 10:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.620		0.249	0.256	1.00	0.346	pCi/L	11/21/17 15:34	11/29/17 17:08	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/21/17 15:34	11/29/17 17:08	1
Y Carrier	79.6		40 - 110					11/21/17 15:34	11/29/17 17:08	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	0.837		0.261	0.269	5.00	0.346	pCi/L		12/19/17 08:52	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-AP-3R**

**Lab Sample ID: 180-72643-16**

Date Collected: 11/15/17 12:55

Matrix: Water

Date Received: 11/18/17 09:00

**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		0.0689	0.0700	1.00	0.0794	pCi/L	11/21/17 14:53	12/13/17 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					11/21/17 14:53	12/13/17 10:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.509		0.273	0.277	1.00	0.411	pCi/L	11/21/17 15:34	11/29/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					11/21/17 15:34	11/29/17 17:08	1
Y Carrier	81.9		40 - 110					11/21/17 15:34	11/29/17 17:08	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	0.647		0.282	0.286	5.00	0.411	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR-AP-4R**

**Lab Sample ID: 180-72643-17**

Date Collected: 11/14/17 12:30

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.159		0.0781	0.0794	1.00	0.0907	pCi/L	11/21/17 14:53	12/13/17 10:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.5		40 - 110					11/21/17 14:53	12/13/17 10:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.488		0.304	0.307	1.00	0.467	pCi/L	11/21/17 15:34	11/29/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.5		40 - 110					11/21/17 15:34	11/29/17 17:08	1
Y Carrier	74.8		40 - 110					11/21/17 15:34	11/29/17 17:08	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: CCR-AP-4R

Date Collected: 11/14/17 12:30

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-17

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	0.647		0.314	0.317	5.00	0.467	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR-AP-5

Date Collected: 11/15/17 14:40

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-18

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.100		0.0630	0.0637	1.00	0.0835	pCi/L	11/21/17 14:53	12/13/17 10:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					11/21/17 14:53	12/13/17 10:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.330	U	0.231	0.233	1.00	0.360	pCi/L	11/21/17 15:34	11/29/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					11/21/17 15:34	11/29/17 17:08	1
Y Carrier	82.6		40 - 110					11/21/17 15:34	11/29/17 17:08	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	0.430		0.239	0.242	5.00	0.360	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR-AP-6

Date Collected: 11/16/17 10:45

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-19

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.122		0.0660	0.0669	1.00	0.0792	pCi/L	11/21/17 14:53	12/13/17 10:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					11/21/17 14:53	12/13/17 10:02	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Client Sample ID: CCR-AP-6

Date Collected: 11/16/17 10:45

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-19

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	0.406		0.241	0.244	1.00	0.365	pCi/L	11/21/17 15:34	11/29/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					11/21/17 15:34	11/29/17 17:08	1
Y Carrier	79.6		40 - 110					11/21/17 15:34	11/29/17 17:08	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	0.528		0.250	0.253	5.00	0.365	pCi/L		12/19/17 08:52	1

## Client Sample ID: CCR-AP-7R

Date Collected: 11/14/17 16:40

Date Received: 11/18/17 09:00

## Lab Sample ID: 180-72643-20

Matrix: Water

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217		0.0788	0.0812	1.00	0.0745	pCi/L	11/21/17 14:53	12/13/17 10:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					11/21/17 14:53	12/13/17 10:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.559		0.263	0.268	1.00	0.388	pCi/L	11/21/17 15:34	11/29/17 17:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					11/21/17 15:34	11/29/17 17:09	1
Y Carrier	81.5		40 - 110					11/21/17 15:34	11/29/17 17:09	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	0.776		0.275	0.280	5.00	0.388	pCi/L		12/19/17 08:52	1

TestAmerica Pittsburgh



# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-BK-1R**

**Lab Sample ID: 180-72643-21**

Date Collected: 11/16/17 13:15

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.165		0.0725	0.0740	1.00	0.0776	pCi/L	11/22/17 09:27	12/18/17 06:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.4		40 - 110					11/22/17 09:27	12/18/17 06:00	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.388	U	0.266	0.268	1.00	0.416	pCi/L	11/22/17 10:10	11/30/17 16:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.4		40 - 110					11/22/17 10:10	11/30/17 16:11	1
Y Carrier	87.1		40 - 110					11/22/17 10:10	11/30/17 16:11	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	0.553		0.276	0.278	5.00	0.416	pCi/L		12/19/17 08:52	1

**Client Sample ID: CCR-BK-2**

**Lab Sample ID: 180-72643-22**

Date Collected: 11/16/17 15:40

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.149		0.0933	0.0943	1.00	0.126	pCi/L	11/22/17 09:27	12/18/17 06:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110					11/22/17 09:27	12/18/17 06:00	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.98		0.510	0.579	1.00	0.539	pCi/L	11/22/17 10:10	11/30/17 16:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.6		40 - 110					11/22/17 10:10	11/30/17 16:11	1
Y Carrier	85.2		40 - 110					11/22/17 10:10	11/30/17 16:11	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: CCR-BK-2**

**Lab Sample ID: 180-72643-22**

Date Collected: 11/16/17 15:40

Matrix: Water

Date Received: 11/18/17 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	3.13		0.518	0.587	5.00	0.539	pCi/L		12/19/17 08:52	1

**Client Sample ID: FB 1**

**Lab Sample ID: 180-72643-23**

Date Collected: 11/16/17 15:40

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0116	U	0.0316	0.0317	1.00	0.0619	pCi/L	11/22/17 09:27	12/18/17 06:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/22/17 09:27	12/18/17 06:00	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.06		0.275	0.292	1.00	0.330	pCi/L	11/22/17 10:10	11/30/17 16:12	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					11/22/17 10:10	11/30/17 16:12	1
Y Carrier	86.4		40 - 110					11/22/17 10:10	11/30/17 16:12	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	1.08		0.277	0.294	5.00	0.330	pCi/L		12/19/17 08:52	1

**Client Sample ID: DUP 1**

**Lab Sample ID: 180-72643-24**

Date Collected: 11/16/17 00:00

Matrix: Water

Date Received: 11/18/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.251		0.113	0.115	1.00	0.118	pCi/L	11/22/17 09:27	12/18/17 06:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.8		40 - 110					11/22/17 09:27	12/18/17 06:00	1

# Client Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

**Client Sample ID: DUP 1**  
**Date Collected: 11/16/17 00:00**  
**Date Received: 11/18/17 09:00**

**Lab Sample ID: 180-72643-24**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-228</b>	<b>0.687</b>		0.367	0.372	1.00	0.551	pCi/L	11/22/17 10:10	11/30/17 16:12	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.8		40 - 110					11/22/17 10:10	11/30/17 16:12	1
Y Carrier	87.1		40 - 110					11/22/17 10:10	11/30/17 16:12	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
<b>Combined Radium 226 + 228</b>	<b>0.937</b>		0.384	0.389	5.00	0.551	pCi/L		12/19/17 08:52	1



# QC Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

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

**Lab Sample ID: MB 160-338524/1-A**  
**Matrix: Water**  
**Analysis Batch: 341752**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 338524**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04157	U	0.0453	0.0455	1.00	0.0709	pCi/L	11/21/17 14:53	12/13/17 09:56	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					11/21/17 14:53	12/13/17 09:56	1

**Lab Sample ID: LCS 160-338524/2-A**  
**Matrix: Water**  
**Analysis Batch: 341752**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 338524**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.8	11.97		1.21	1.00	0.0860	pCi/L	101	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	102		40 - 110						

**Lab Sample ID: 180-72643-2 DU**  
**Matrix: Water**  
**Analysis Batch: 341752**

**Client Sample ID: CCR LF-2**  
**Prep Type: Total/NA**  
**Prep Batch: 338524**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.465		0.4142		0.112	1.00	0.0685	pCi/L	0.22	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	100		40 - 110							

**Lab Sample ID: MB 160-338693/1-A**  
**Matrix: Water**  
**Analysis Batch: 342590**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 338693**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.006802	U	0.0312	0.0312	1.00	0.0641	pCi/L	11/22/17 09:27	12/18/17 05:59	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					11/22/17 09:27	12/18/17 05:59	1

**Lab Sample ID: LCS 160-338693/2-A**  
**Matrix: Water**  
**Analysis Batch: 342590**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 338693**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.8	10.70		1.09	1.00	0.0752	pCi/L	91	68 - 137

TestAmerica Pittsburgh

# QC Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

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

**Lab Sample ID: LCS 160-338693/2-A**  
**Matrix: Water**  
**Analysis Batch: 342590**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 338693**

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	102		40 - 110

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

**Lab Sample ID: MB 160-338540/1-A**  
**Matrix: Water**  
**Analysis Batch: 339728**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 338540**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.03976	U	0.196	0.196	1.00	0.348	pCi/L	11/21/17 15:34	11/29/17 17:02	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110	11/21/17 15:34	11/29/17 17:02	1
Y Carrier	76.6		40 - 110	11/21/17 15:34	11/29/17 17:02	1

**Lab Sample ID: LCS 160-338540/2-A**  
**Matrix: Water**  
**Analysis Batch: 339728**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 338540**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	8.78	8.957		1.05	1.00	0.371	pCi/L	102	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	102		40 - 110
Y Carrier	75.9		40 - 110

**Lab Sample ID: 180-72643-2 DU**  
**Matrix: Water**  
**Analysis Batch: 339728**

**Client Sample ID: CCR LF-2**  
**Prep Type: Total/NA**  
**Prep Batch: 338540**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	1.84		1.969		0.385	1.00	0.326	pCi/L	0.17	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	100		40 - 110
Y Carrier	76.6		40 - 110

**Lab Sample ID: MB 160-338699/1-A**  
**Matrix: Water**  
**Analysis Batch: 339951**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 338699**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.8188		0.267	0.277	1.00	0.356	pCi/L	11/22/17 10:10	11/30/17 16:11	1

TestAmerica Pittsburgh

# QC Sample Results

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	103		40 - 110	11/22/17 10:10	11/30/17 16:11	1
Y Carrier	84.9		40 - 110	11/22/17 10:10	11/30/17 16:11	1

Lab Sample ID: LCS 160-338699/2-A  
 Matrix: Water  
 Analysis Batch: 339951

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 338699

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	102		40 - 110
Y Carrier	87.9		40 - 110

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Lab Sample ID: 180-72643-2 DU  
 Matrix: Water  
 Analysis Batch: 342836

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	2.31		2.383		0.401	5.00	0.326	pCi/L	0.1	

# QC Association Summary

Client: Vectren Corporation  
 Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Rad

### Prep Batch: 338524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-72643-1	CCR-LF-1	Total/NA	Water	PrecSep-21	
180-72643-2	CCR LF-2	Total/NA	Water	PrecSep-21	
180-72643-3	CCR LF-3	Total/NA	Water	PrecSep-21	
180-72643-4	CCR LF-4	Total/NA	Water	PrecSep-21	
180-72643-5	CCR LF-5	Total/NA	Water	PrecSep-21	
180-72643-6	CCR LF-6	Total/NA	Water	PrecSep-21	
180-72643-7	CCR SP-1	Total/NA	Water	PrecSep-21	
180-72643-8	CCR SP-2	Total/NA	Water	PrecSep-21	
180-72643-9	CCR SP-3	Total/NA	Water	PrecSep-21	
180-72643-10	DUP 2	Total/NA	Water	PrecSep-21	
180-72643-11	DUP 3	Total/NA	Water	PrecSep-21	
180-72643-12	FIELD BLANK 2	Total/NA	Water	PrecSep-21	
180-72643-13	FIELD BLANK 3	Total/NA	Water	PrecSep-21	
180-72643-14	CCR-AP-1R	Total/NA	Water	PrecSep-21	
180-72643-15	CCR-AP-2R	Total/NA	Water	PrecSep-21	
180-72643-16	CCR-AP-3R	Total/NA	Water	PrecSep-21	
180-72643-17	CCR-AP-4R	Total/NA	Water	PrecSep-21	
180-72643-18	CCR-AP-5	Total/NA	Water	PrecSep-21	
180-72643-19	CCR-AP-6	Total/NA	Water	PrecSep-21	
180-72643-20	CCR-AP-7R	Total/NA	Water	PrecSep-21	
MB 160-338524/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-338524/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-72643-2 DU	CCR LF-2	Total/NA	Water	PrecSep-21	

### Prep Batch: 338540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-72643-1	CCR-LF-1	Total/NA	Water	PrecSep_0	
180-72643-2	CCR LF-2	Total/NA	Water	PrecSep_0	
180-72643-3	CCR LF-3	Total/NA	Water	PrecSep_0	
180-72643-4	CCR LF-4	Total/NA	Water	PrecSep_0	
180-72643-5	CCR LF-5	Total/NA	Water	PrecSep_0	
180-72643-6	CCR LF-6	Total/NA	Water	PrecSep_0	
180-72643-7	CCR SP-1	Total/NA	Water	PrecSep_0	
180-72643-8	CCR SP-2	Total/NA	Water	PrecSep_0	
180-72643-9	CCR SP-3	Total/NA	Water	PrecSep_0	
180-72643-10	DUP 2	Total/NA	Water	PrecSep_0	
180-72643-11	DUP 3	Total/NA	Water	PrecSep_0	
180-72643-12	FIELD BLANK 2	Total/NA	Water	PrecSep_0	
180-72643-13	FIELD BLANK 3	Total/NA	Water	PrecSep_0	
180-72643-14	CCR-AP-1R	Total/NA	Water	PrecSep_0	
180-72643-15	CCR-AP-2R	Total/NA	Water	PrecSep_0	
180-72643-16	CCR-AP-3R	Total/NA	Water	PrecSep_0	
180-72643-17	CCR-AP-4R	Total/NA	Water	PrecSep_0	
180-72643-18	CCR-AP-5	Total/NA	Water	PrecSep_0	
180-72643-19	CCR-AP-6	Total/NA	Water	PrecSep_0	
180-72643-20	CCR-AP-7R	Total/NA	Water	PrecSep_0	
MB 160-338540/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-338540/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-72643-2 DU	CCR LF-2	Total/NA	Water	PrecSep_0	

TestAmerica Pittsburgh

# QC Association Summary

Client: Vectren Corporation  
Project/Site: CCR Groundwater Monitoring ABBrown

TestAmerica Job ID: 180-72643-2

## Rad (Continued)

### Prep Batch: 338693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-72643-21	CCR-BK-1R	Total/NA	Water	PrecSep-21	
180-72643-22	CCR-BK-2	Total/NA	Water	PrecSep-21	
180-72643-23	FB 1	Total/NA	Water	PrecSep-21	
180-72643-24	DUP 1	Total/NA	Water	PrecSep-21	
MB 160-338693/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-338693/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

### Prep Batch: 338699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-72643-21	CCR-BK-1R	Total/NA	Water	PrecSep_0	
180-72643-22	CCR-BK-2	Total/NA	Water	PrecSep_0	
180-72643-23	FB 1	Total/NA	Water	PrecSep_0	
180-72643-24	DUP 1	Total/NA	Water	PrecSep_0	
MB 160-338699/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-338699/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	



Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Client Contact  
Company Name: ATC Group Services  
Address: 6149 Weddell Ave, Blue Bell, PA 19068  
City/State/Zip: Evansville, IN 47915  
Phone: (812) 228-9422  
Fax: \_\_\_\_\_  
Project Name: AB Brown GWS 4017  
Site: AB Brown  
P O # \_\_\_\_\_

Project Manager: Mark Betting  
Tel/Fax: \_\_\_\_\_  
Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below Standard  
 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)		EPA App III Total Metals (60204)	EPA App III Arsenic (9056A)	PH (9040c)	TDS (SM 2540c)	EPA App IV Total Metals (60204)	Mercury Total (PA79)	Radium 226+228 combined (9030/9040)
						Y	N	Y	N							
CCR-LF-1	11/16/17	1200	G		5	N	N	N	N							
CCR-LF-2	11/14/17	1350			1	Y	Y	Y	Y							
CCR-LF-3	11/14/17	1215			1	Y	Y	Y	Y							
CCR-LF-4	11/16/17	1430			1	Y	Y	Y	Y							
CCR-LF-5	11/14/17	1530			1	Y	Y	Y	Y							
CCR-LF-6	11/14/17	1200			1	Y	Y	Y	Y							
CCR-SP-1	11/15/17	1215			1	Y	Y	Y	Y							
CCR-SP-2	11/15/17	1330			1	Y	Y	Y	Y							
CCR-SP-3	11/15/17	1500			10	Y	Y	Y	Y							
MSMSD 1	11/14/17	-			5	Y	Y	Y	Y							
Dup 2	11/15/17	-			5	Y	Y	Y	Y							
Dup 3	11/15/17	-			5	Y	Y	Y	Y							



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

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

Possible Hazard Identification: 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:

Custody Seal No.: \_\_\_\_\_  
 Company: ATC  
 Date/Time: 11/16/17  
 Received by: Fed Ex  
 Company: ATC

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Cor'd: \_\_\_\_\_  
 Date/Time: 11-18-17  
 Received by: Jacob Winsett  
 Company: Jacob Winsett  
 Date/Time: 11-18-17  
 Received in Laboratory by: \_\_\_\_\_  
 Date/Time: 9:00



Regulatory Program:  DW  NPDES  RCRA  Other:

<b>Client Contact</b> Company Name: ATC Group Services LLC Address: 6149 Wedekin Ave, Bladyside, IN 47715 City/State/Zip: Evansville, IN 47715 Phone: (812) 228-9422 Fax: Project Name: AB Brown GWS 4Q17 Site: AB Brown P.O.#		<b>Project Manager: Mark Breting</b> Tell Fax: Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: <u>Standard</u> <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		<b>Site Contact: Brandi Baker</b> Date: 11/16/17 Lab Contact: Veronica Berto Carrier: Fed Ex Date: 11/16/17 Carrier: Fed Ex		COC No: 2 of 3 COCs Sampler: Jacob Winsett For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
<b>Sample Identification</b> Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont.		Filtered Sample (Y/N) Perform MS / MSD (Y/N)		Sample Specific Notes:		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	
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH; 6= Other 1, 2 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. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input checked="" type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Cooler Temp. (°C): Obs'd: _____ Corrd: _____ Therm ID No.: _____		Date/Time: _____ Date/Time: _____ Date/Time: _____		Date/Time: _____ Date/Time: _____ Date/Time: _____	
<b>Special Instructions/QC Requirements &amp; Comments:</b>		Custody Seal No.: Company: ATC Received by: <u>Jacob Winsett</u> Date/Time: 11/16/17 Received by: <u>Debra Watson</u> Date/Time: 11-18-17 Received in Laboratory by: _____ Date/Time: 9:00		Company: _____ Received by: _____ Date/Time: _____		Company: _____ Received by: _____ Date/Time: _____	



Chain of Custody Record

<b>Client Information</b> Address: PO BOX 209 City: Evansville State, Zip: IN, 47702 Phone: Email: lmessinger@vectren.com Project Name: CCR Groundwater Monitoring - AB Brown Site:		Lab PM: Bortol, Veronica E-Mail: veronica.bortol@testamericainc.com Camer Tracking No(s): Job #:	
Due Date Requested: TAT Requested (days): STANDARD PO #: Purchase Order Requested WO #:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Sample Identification CCR-AP-1R CCR-AP-2R CCR-AP-3R CCR-AP-4R CCR-AP-5 CCR-AP-6 CCR-AP-7R CCR-BK-1R CCR-BK-2 FB 1 DUP 1		Analysis Requested 9316_Ra226 - Standard Target List 9040C_9066A_ORGFM_280 6010C_6020A_7470A 2640C_Calcd - TDS 9320_Ra228 - Standard Target List	
Sample Date 11/14/17 11/15/17 11/15/17 11/14/17 11/15/17 11/16/17 11/14/17 11/16/17 ↓ —		Sample Time 15:35 16:00 18:55 12:30 14:40 10:45 16:40 13:15 15:40 15:40 —	
Sample Type (C=Comp, G=grab) G — — — — — — — — — —		Matrix (W=water, S=solid, O=wastewater, BT=tissue, A=air) Water Water Water Water Water Water Water Water Water Water Water Water	
Field Filtered Sample (Yes or No) X X X X X X X X X X X X X		Perform MS/MSD (Yes or No) X X X X X X X X X X X X X	
Total Number of Containers X X X X X X X X X X X X X		Special Instructions/Note: X X X X X X X X X X X X X	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input 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: Megan Foye Relinquished by: Fed Ex Relinquished by:		Date: 11/16/17 18:00 Date: 11/16/17 18:00 Date:	
Custody Seal Intact: Δ Yes Δ No		Cooler Temperature(s) °C and Other Remarks:	





180-72643 Waybill

ORIGIN ID: EVVA (317) 9-9-4990  
ATC GROUP SERVICES

7988 CENTERPOINT DR STE 100  
INDIANAPOLIS, IN 462563981  
UNITED STATES US

TO **VERONICA BERTOT**  
**TEST AMERICA**  
**301 ALPHA DR**

**PITTSBURGH PA 15238**

(412) 983-7058  
REF: 1001  
PO:



FedEx  
Express



**FRI - 17 NOV 3:00**  
**STANDARD OVERNIGHT**

1 of 6  
TRK# 8106 7843 8880  
0200  
## MASTER ##

**NA AGCA**

Uncorrected temp 1.1 °C  
Thermometer ID 13  
CF 0 Initials TJ

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

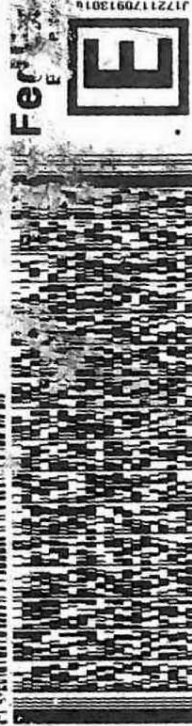
ORIGIN ID: EVVA (317) 849-4990  
ATC GROUP SERVICES

7988 CENTERPOINT DR STE 100  
INDIANAPOLIS, IN 462563981  
UNITED STATES US

TO **VERONICA BERTOT**  
**TEST AMERICA**  
**301 ALPHA DR**

**PITTSBURGH PA 15238**

(412) 983-7058  
REF: 1001  
DEPT:



FedEx  
Express  
**E**

**FRI - 17 NOV 3:00P**  
**STANDARD OVERNIGHT**

2 of 6  
MPS# 7884 9478 4129  
0681  
Mstr# 8106 7843 8880  
0200

**NA AGCA**

**15238**  
**PA-US PIT**

Uncorrected temp 1.4 °C  
Thermometer ID 13

CF 0 Initials TJ

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

- 1
- 2
- 3
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- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

ORIGIN ID: EVVA (317) 849-4990  
ATC GROUP SERVICES  
SHIP DATE: 16NOV17  
ACTWGT: 30.00 LB MAN  
CAD: POS1822  
DIMS: 24X14X13 IN  
BILL SENDER

7988 CENTERPOINT DR STE 100  
INDIANAPOLIS, IN 462563381  
UNITED STATES US  
SHIP DATE: 16NOV17  
ACTWGT: 30.00 LB MAN  
CAD: POS1822  
DIMS: 24X14X13 IN  
BILL SENDER

TO VERONICA BERTOT  
TEST AMERICA  
301 ALPHA DR

TO VERONICA BERTOT  
TEST AMERICA  
301 ALPHA DR

PITTSBURGH PA 15238

PITTSBURGH PA 15238

(412) 968-7058  
REF: 0  
DEPT: RT 0  
POI: FZ 0

(412) 968-7058  
REF: 0  
DEPT: 4130  
POI: 11.18



FedEx Express  
E

FedEx Express  
E

FRI - NOV 3:00P  
STANDARD OVERNIGHT

FRI - 17 NOV 3:00P  
STANDARD OVERNIGHT

MPS# 7884 9478 4130  
0681  
Mstr# 8106 7843 8880

MPS# 7884 9478 4140  
0681  
Mstr# 8106 7843 8880

NA AGCA

NA AGCA

15238 PA-US PIT

15238 PA-US PIT



Uncorrected temp 4.2 °C  
Thermometer ID 13  
CF 0 Initials TT

Uncorrected temp 2.9 °C  
Thermometer ID 13  
CF 0 Initials D

PT-WI-SR-001 effective 7/25/13

PT-WI-SR-001 effective 7/25/13

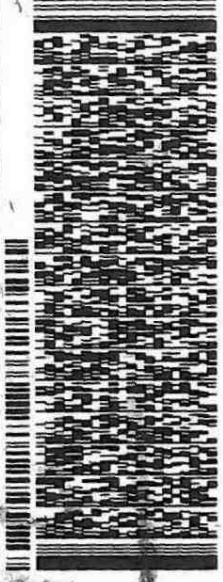
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

ORIGIN ID: EVVA  
ATC GROUP SERVICES  
7988 CENTERPOINT DR STE 100  
INDIANAPOLIS, IN 462563381  
UNITED STATES US  
BILL SENDER

TO VERONICA BERTOT  
TEST AMERICA  
301 ALPHA DR

PITTSBURGH PA 15238

(412) 969-7068  
REF: 0200



FRI - 17 NOV 3:00P  
STANDARD OVERNIGHT

MPS# 7884 9478 4162  
O681  
Mstr# 8106 7843 8880

NA AGCA  
15238  
PA-US PIT

Uncorrected temp. 35 °C  
Thermometer ID 13

CF 0 Initials JB

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

RT 0  
FZ 0

4162  
1.18

**Controlled**  
CART IS DELAYED IN

SHIP DATE: 16NOV17  
ACT WT: 30.00 LB MAN  
ACT WT: 30.1825 IN  
CAD: /POS1822  
DIMS: 24x14x13 IN  
BILL SENDER

ORIGIN ID: EVVA (317) 949-4990  
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



FRI - 17 NOV 3:00P  
STANDARD OVERNIGHT

MPS# 7884 9478 4151  
O681  
Mstr# 8106 7843 8880

NA AGCA  
15238  
PA-US PIT

Uncorrected temp. 31 °C  
Thermometer ID 13

CF 0 Initials JB

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



- 1
- 2
- 3
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- 10
- 11
- 12
- 13

# Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-72643-2

**Login Number: 72643**

**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: 180-72643-2

**Login Number: 72643**

**List Number: 2**

**Creator: Clarke, Jill C**

**List Source: TestAmerica St. Louis**

**List Creation: 11/21/17 12:40 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0, 18.0, 18.0, 18.0, 18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## Login Sample Receipt Checklist

Client: Vectren Corporation

Job Number: 180-72643-2

**Login Number: 72643**

**List Number: 3**

**Creator: Clarke, Jill C**

**List Source: TestAmerica St. Louis**

**List Creation: 11/21/17 01:08 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0, 18.0, 18.0, 18.0, 18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	