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31 January 2018 File No. 129778-002

Westar Energy, Inc. 818 South Kansas Avenue Topeka, Kansas 66612

Attention: Jared Morrison

Manager, Water and Waste Programs

Subject: 2017 Annual Groundwater Monitoring and Corrective Action Report for

the Flue Gas Desulfurization Landfill

Jeffrey Energy Center St. Marys, Kansas

Dear Mr. Morrison:

Haley & Aldrich, Inc. is pleased to submit this Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for the Flue Gas Desulfurization (FGD) Landfill at the Jeffrey Energy Center. This Annual Report was developed in accordance with the United States Environmental Protection Agency CCR Rule effective 19 October 2015 (Rule), specifically Code of Federal Regulations Title 40, subsection § 257.90(e). The Annual Report documents the design and construction of the groundwater monitoring system for the FGD Landfill consistent with applicable sections of § 257.90 through 257.98.

This report describes activities conducted in the prior calendar year and documents compliance with the Rule. The specific requirements listed in Sections § 257.90(e)(1)-(5) of the Rule are provided in bold/italic type, followed by a short narrative describing how the Rule has been met.

Sincerely yours, HALEY & ALDRICH, INC.

Steve Putrich, P.E. Project Principal

Mark Nicholls, P.G. Lead Hydrogeologist

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2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT FGD LANDFILL JEFFREY ENERGY CENTER ST. MARYS, KANSAS

by Haley & Aldrich, Inc. Cleveland, Ohio

for Westar Energy, Inc. Topeka, Kansas

File No. 129778-002 January 2018

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1 FGD Landfill Monitoring Well Location Map



1. 40 CFR § 257.90 Applicability

1.1 40 CFR § 257.90(a)

Except as provided for in §257.100 for inactive CCR surface impoundments, all CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §257.90 through 257.98.

The Flue Gas Desulfurization (FGD) Landfill at the Jeffrey Energy Center (JEC), which is the coal combustion residuals (CCR) management unit addressed in this Annual Groundwater Monitoring and Corrective Action Report (Annual Report), is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) § 257.90 through 257.98. In particular, this document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e) (Rule).

1.2 40 CFR § 257.90(e)

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by §257.105(h)(1).

This Annual Report is the initial report for the JEC FGD Landfill as required by the Rule as the groundwater monitoring system was established and certified by 17 October 2017. Prior to 17 October 2017, Westar installed a groundwater monitoring system at the FGD Landfill consistent with § 257.91. Groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 is provided in this report. This Annual Report documents the activities completed in the calendar year 2017.

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

As required by § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for the FGD Landfill is included in this report as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Network Description Report prepared for Westar, which was placed in the facility's operating record by 17 October 2017 as required by § 257.105(h)(2).



(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

The design and construction of the monitoring well network for FGD Landfill at JEC are described in the CCR Groundwater Monitoring Network Description Report dated 17 October 2017. This report was placed in the facility's operating record by 17 October 2017, as required by § 257.105(h)(2). Since the groundwater monitoring system was certified, no new monitoring wells were installed or decommissioned.

(3) In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

In accordance with § 257.94(b), eight independent samples from each background and downgradient monitoring well were collected prior to 17 October 2017. A summary table including the sample names, dates of sample collection, reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for the FGD Landfill is presented in Table I of this report. In 2017, the groundwater monitoring sampling and laboratory analyses were completed under the detection monitoring program.

(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

Detection monitoring was conducted in accordance with § 257.94(b), and no transitions between monitoring programs occurred for the FGD Landfill in calendar year 2017.

(5) Other information required to be included in the annual report as specified in §257.90 through §257.98.

This initial Annual Report documents activities conducted to comply with § 257.90 through § 257.94 of the Rule. It is understood that there are supplemental references in § 257.90 through § 257.98 to information that must be placed in the Annual Report; however, none of the activities referenced as required in the Annual Report are relevant to the groundwater monitoring program for activities completed in calendar year 2017.



1.3 40 CFR § 257.90(f)

The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(h), the notification requirements specified in § 257.106(h), and the internet requirements specified in § 257.107(h).

To comply with the Rule recordkeeping requirements:

- Pursuant to § 257.105(h)(1), this Annual Report must be placed in the facility's operating record.
- Pursuant to § 257.106(h)(1), notification must be sent to the relevant State Director and/or Tribal authority within 30 days of this Annual Report being placed on the facility's operating record [§ 257.106(d)].
- Pursuant to § 257.107(h)(1), this Annual Report must be posted to the Westar CCR Website within 30 days of this Annual Report being placed on the facility's operating record [§ 257.107(d)].



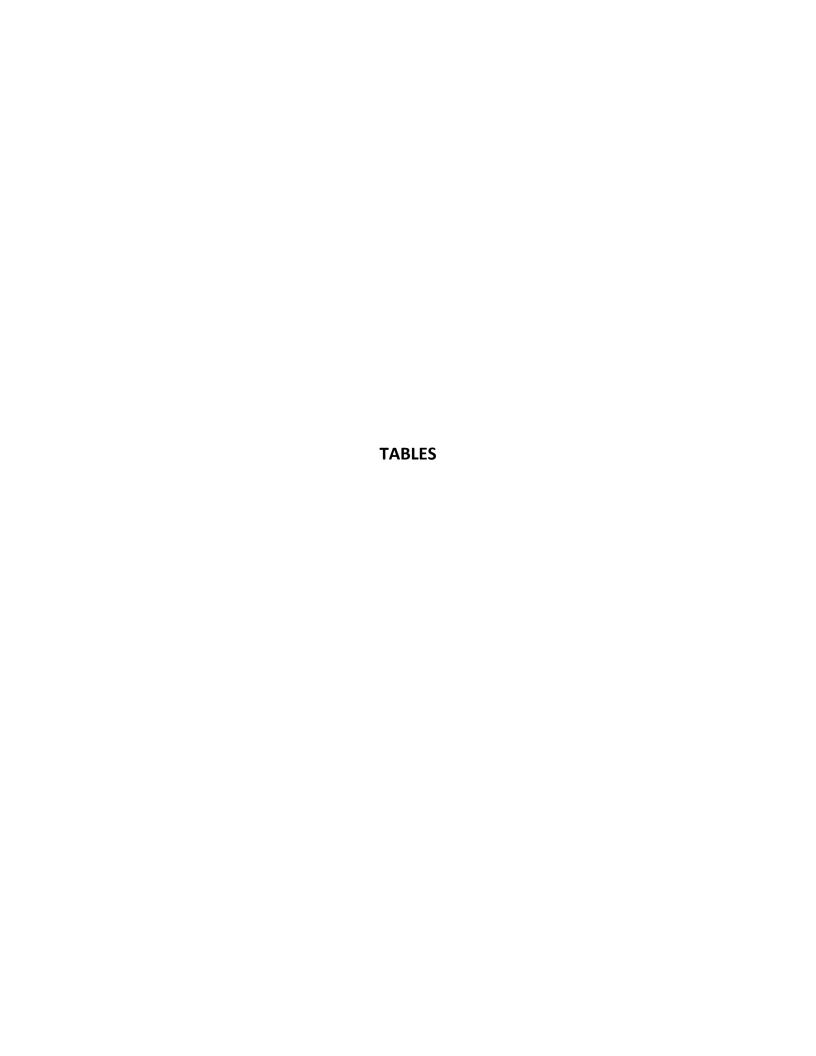


TABLE I SUMMARY OF ANALYTICAL RESULTS

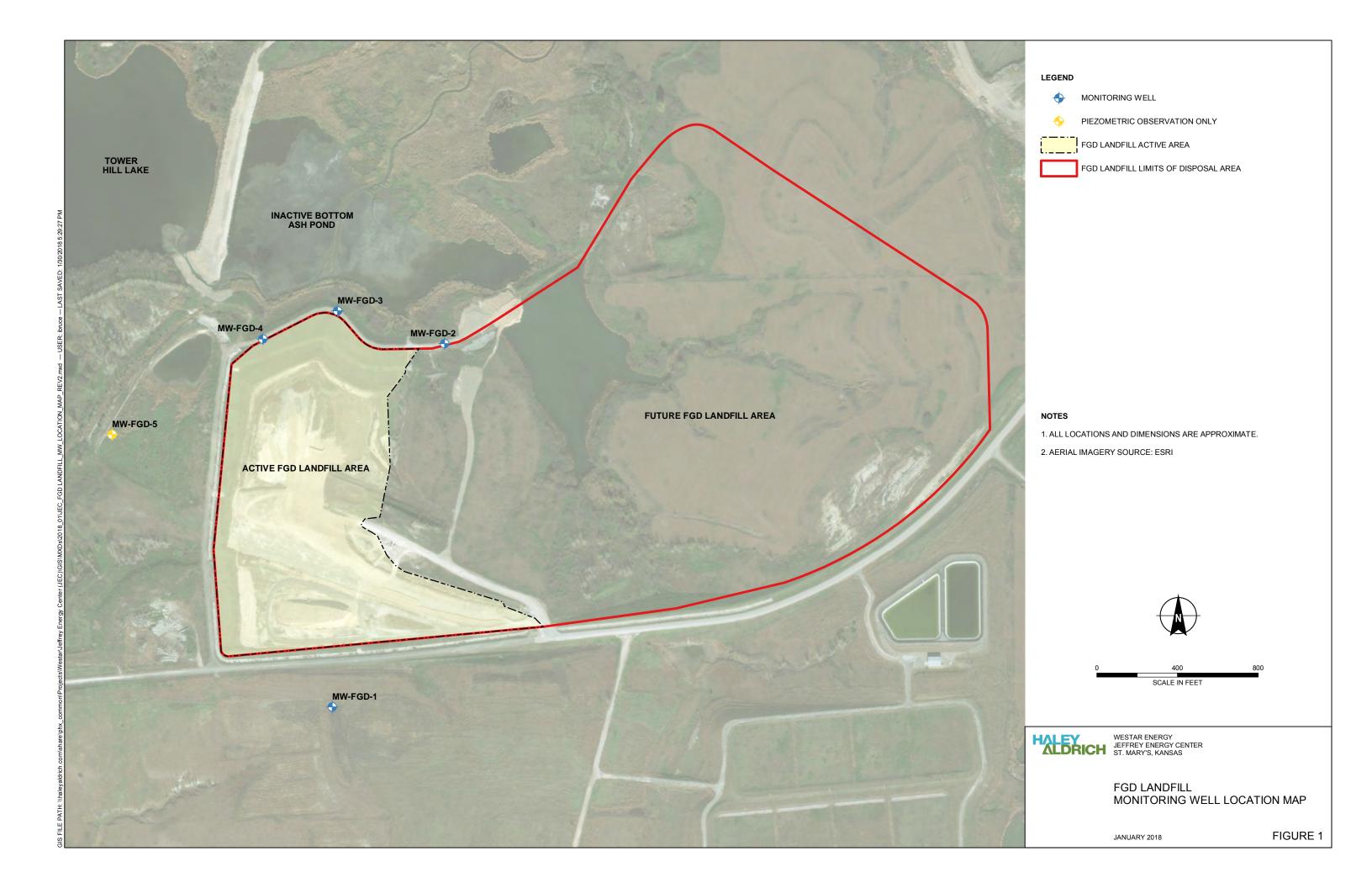
Westar Jeffrey Energy Center FGD Landfill St. Marys, Kansas

Sample Date 8/24/2016 9/22/2016 11/3/2016 12/15/2016 2/9/2017 4/7/2017 5/26/2017 6/29/2017 8/24/2016 9/23/2016 11/3/2016	73.42 73.24 73.24 72.35 73.38 73.46 69.71 70.35 72.47 22.55 23.05	Groundwater Elevation (ft AMSL) 1165.63 1165.81 1166.70 1165.57 1169.34 1168.70 1166.58 1161.65	Temperature (Deg C) 17.35 17.13 15.69 12.70 12.74 14.26 15.25 15.67	Conductivity (µS/cm) 837 836 766 836 840 847 861 846		7.36 7.14 7.09 7.14 7.08	Boron, Total 0.12 0.11 0.10 <0.10 <0.10 <0.10	95.7 90.4 94.6 90.3 90.4	Chloride 44.5 46.5 49.2 44.2	0.30 0.33 0.32	91.3 93.9	Ph (su)	TDS	Antimony, Total	Arsenic,	Barium,	Beryllium,		USEPA Appendix IV Constituents (mg/L)							, ,		
9/22/2016 11/3/2016 12/15/2016 2/9/2017 4/7/2017 5/26/2017 6/29/2017 8/24/2016 9/23/2016	73.24 72.35 73.38 73.46 69.71 70.35 72.47 22.55	1165.81 1166.70 1165.67 1165.59 1169.34 1168.70 1166.58	17.13 15.69 12.70 12.74 14.26 15.25 15.67	836 766 836 840 847 861	2.6 3.8 5.7 4.9 3.2 3.9	7.36 7.14 7.09 7.14 7.08	0.11 0.10 <0.10 <0.10	90.4 94.6 90.3	46.5 49.2	0.33		7.5		Total	Total	Total	Total	Cadmium, Total	Chromium, Total	Cobalt, Total	Lead, Total	Lithium, Total	Molybdenum, Total	Selenium, Total	Thallium, Total	Mercury, Total	Fluoride	Radium-226 & 228 Combined
11/3/2016 12/15/2016 2/9/2017 4/7/2017 5/26/2017 6/29/2017 8/24/2016 9/23/2016	72.35 73.38 73.46 69.71 70.35 72.47 22.55	1166.70 1165.67 1165.59 1169.34 1168.70 1166.58	15.69 12.70 12.74 14.26 15.25 15.67	766 836 840 847 861	3.8 5.7 4.9 3.2 3.9	7.14 7.09 7.14 7.08	0.10 <0.10 <0.10	94.6 90.3	49.2		93.9		543	<0.0010	<0.0010	0.29	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.015	0.0015	<0.0010	<0.0010	<0.00020	0.30	0.420
12/15/2016 2/9/2017 4/7/2017 5/26/2017 6/29/2017 8/24/2016 9/23/2016	73.38 73.46 69.71 70.35 72.47 22.55	1165.67 1165.59 1169.34 1168.70 1166.58	12.70 12.74 14.26 15.25 15.67	836 840 847 861	5.7 4.9 3.2 3.9	7.09 7.14 7.08	<0.10 <0.10	90.3		0.32		7.6	507	<0.0010	<0.0010	0.28	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.014	0.0013	<0.0010	<0.0010	<0.00020	0.33	1.55
2/9/2017 4/7/2017 5/26/2017 6/29/2017 8/24/2016 9/23/2016	73.46 69.71 70.35 72.47 22.55	1165.59 1169.34 1168.70 1166.58	12.74 14.26 15.25 15.67	840 847 861	4.9 3.2 3.9	7.14 7.08	<0.10		44.2		95.4	7.4	495	<0.0010	<0.0010	0.31	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.016	0.0013	<0.0010	<0.0010	<0.00020	0.32	1.34
4/7/2017 5/26/2017 6/29/2017 8/24/2016 9/23/2016	69.71 70.35 72.47 22.55	1169.34 1168.70 1166.58	14.26 15.25 15.67	847 861	3.2 3.9	7.08		90.4		0.33	91.6	7.8	496	<0.0010	<0.0010	0.28	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.016	0.0012	<0.0010	<0.0010	<0.00020	0.33	0.758
5/26/2017 6/29/2017 8/24/2016 9/23/2016	70.35 72.47 22.55	1168.70 1166.58	15.25 15.67	861	3.9		<0.10		62.5	0.33	89.5	7.2	505	<0.0010	<0.0010	0.27	<0.0010	<0.00050	<0.0050	0.0010	<0.0050	0.014	0.0083	<0.0010	<0.0010	<0.00020	0.33	1.16
6/29/2017 8/24/2016 9/23/2016	72.47 22.55	1166.58	15.67					98.2	63.9	0.34	85.5	7.2	524	<0.0010	<0.0010	0.31	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.011	0.0014	<0.0010	<0.0010	<0.00020	0.34	0.947
8/24/2016 9/23/2016	22.55			846		7.32	<0.10	97.3	66.2	0.36	87.0	7.6	545	<0.0010	<0.0010	0.30	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.014	0.0014	<0.0010	<0.0010	<0.00020	0.36	0.927
9/23/2016		1161.65			3.2	7.31	0.11	90.4	49.7	0.35	93.1	7.3	515	<0.0010	<0.0010	0.29	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.015	0.0013	<0.0010	<0.0010	<0.00020	0.35	0.680
., ., .			16.80	899	5.2	7.25	0.26	121	31.7	0.36	181	7.3	643	<0.0010	<0.0010	0.078	<0.0010	<0.00050	<0.0050	0.0011	<0.0050	<0.010	0.0047	<0.0010	<0.0010	<0.00020	0.36	0.803
		1161.15	15.03	888	2.6	7.33	0.26	111	31.9	0.38	177	7.8	573	<0.0010	<0.0010	0.072	<0.0010	<0.00050	<0.0050	0.0010	<0.0050	<0.010	0.0044	<0.0010	<0.0010	<0.00020	0.38	0.368
	22.74	1161.46	15.65	1029	11.0	6.99	0.26	161	36.6	0.35	325	7.3	769	<0.0010	<0.0010	0.097	<0.0010	<0.00050	<0.0050	0.0016	<0.0050	<0.010	0.0040	0.0010	<0.0010	<0.00020	0.35	0.703
12/15/2016	23.22	1160.98	12.05	953	8.5	7.09	0.23	121	34.3	0.34	201	7.5	632	<0.0010	<0.0010	0.072	<0.0010	<0.00050	<0.0050	0.0011	<0.0050	0.010	0.0039	<0.0010	<0.0010	<0.00020	0.34	0.866
																												1.14
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						_																						1.348
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						_																						1.53
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																												0.731
																												0.494
																												1.32
																												0.629
																												0.891
																			<0.0050				0.0038		<0.0010			0.652
																												1.53
	2/9/2017 4/7/2017 5/26/2017	4/7/2017 21.60 5/26/2017 21.82 6/30/2017 22.70 8/25/2016 24.06 9/23/2016 24.08 11/3/2016 24.04 12/15/2016 24.68 4/7/2017 23.01 5/26/2017 23.23 6/30/2017 24.13 8/25/2016 31.99 9/23/2016 31.60 11/15/2016 32.18 2/9/2017 32.20 4/7/2017 30.40 5/26/2017 30.75	4/7/2017 21.60 1162.60 5/26/2017 21.82 1162.38 6/30/2017 22.70 1161.50 8/25/2016 24.06 1162.20 9/23/2016 24.38 1161.88 11/3/2016 24.04 1162.22 12/15/2016 24.62 1161.64 2/9/2017 24.68 1161.58 4/7/2017 23.01 1163.25 5/26/2017 23.23 1163.03 6/30/2017 24.13 1162.13 8/25/2016 31.39 1157.04 9/23/2016 31.69 1156.83 12/15/2016 32.18 1156.25 2/9/2017 32.20 1156.23 4/7/2017 30.40 1158.03 5/26/2017 30.40 1158.03 5/26/2017 30.75 1157.68	4/7/2017 21.60 1162.60 14.79 5/26/2017 21.82 1162.38 16.55 6/30/2017 22.70 1161.50 15.53 8/25/2016 24.06 1162.20 16.39 9/23/2016 24.38 1161.88 16.96 11/3/2016 24.04 1162.22 16.82 12/15/2016 24.62 1161.64 11.20 2/9/2017 24.68 1161.58 12.18 4/7/2017 23.01 1163.25 15.20 5/26/2017 23.23 1163.03 16.82 6/30/2017 24.13 1162.13 17.09 9/23/2016 31.39 1157.04 17.90 9/23/2016 31.69 1156.74 16.79 11/3/2016 31.60 1156.83 16.32 12/15/2016 32.18 1156.25 12.14 2/9/2017 32.20 1156.23 12.45 4/7/2017 30.40 1158.03 14.93 5/26/2017 30.75	4/7/2017 21.60 1162.60 14.79 1047 5/26/2017 21.82 1162.38 16.55 1074 6/30/2017 22.70 1161.50 15.53 1067 8/25/2016 24.06 1162.20 16.39 1086 9/23/2016 24.38 1161.88 16.96 1151 11/3/2016 24.04 1162.22 16.82 1087 12/15/2016 24.62 1161.64 11.20 1254 2/9/2017 24.68 1161.58 12.18 1221 4/7/2017 23.01 1163.25 15.20 1019 5/26/2017 23.23 1163.03 16.82 957 6/30/2017 24.13 1162.13 17.09 1130 8/25/2016 31.39 1157.04 17.90 1341 9/23/2016 31.69 1156.74 16.79 1357 11/3/2016 31.60 1156.83 16.32 1236 12/15/2016 32.18 1156.25 12.1	4/7/2017 21.60 1162.60 14.79 1047 3.9 5/26/2017 21.82 1162.38 16.55 1074 3.6 6/30/2017 22.70 1161.50 15.53 1067 2.6 8/25/2016 24.06 1162.20 16.39 1086 7.4 9/23/2016 24.38 1161.88 16.96 1151 3.9 11/3/2016 24.04 1162.22 16.82 1087 4.5 12/15/2016 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TOC = top of casing
USEPA = United States Environmental Protection Agency

January 2018







HALEY & ALDRICH, INC. 6500 Rockside Road Suite 200 Cleveland, OH 44131 216.739.0555



November 10, 2022 Project No. 0204993-000

TO: Evergy Kansas Central, Inc.

Jared Morrison - Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.

Steven F. Putrich, P.E., Principal Consultant – Engineering Principal Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: 2017 Annual Groundwater Monitoring and Corrective Action Report Addendum

Evergy Kansas Central, Inc. Jeffrey Energy Center

Flue Gas Desulfurization Landfill

The Evergy Kansas Central, Inc. (Evergy) Flue Gas Desulfurization (FGD) Landfill at the Jeffrey Energy Center is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) §257.90 through §257.98 (Rule). An Annual Groundwater Monitoring and Corrective Action (GWMCA) Report documenting the activities completed in 2017 for the FGD Landfill was completed and placed in the facility's operating record on January 31, 2018, as required by the Rule. The Annual GWMCA Report contained the specific information listed in 40 CFR § 257.90(e).

This report addendum has been prepared to supplement the operating record in recognition of comments received by Evergy from the U.S. Environmental Protection Agency (USEPA) on January 11, 2022. In addition to the information listed in 40 CFR §257.90(e), the USEPA indicated in their comments that the GWMCA Report should contain:

- Results of laboratory analysis of groundwater or other environmental media samples for the
 presence of constituents of Appendices III and IV to 40 CFR Part 257 (or of other constituents,
 such as those supporting characterization of site conditions that may ultimately affect a
 remedy);
- Required statistical analyses performed on those (laboratory analysis) results;
- Measured groundwater elevations; and
- Calculated groundwater flow rate and direction.

While this information is not specifically referred to in 40 CFR §257.90(e) for inclusion in the GWMCA Reports, it has been routinely collected and maintained in Evergy's files and is being provided in the attachments to this addendum. The applicable laboratory analysis reports for baseline sampling events in 2016 and 2017 are included in Attachment 1. Since no statistical analyses were completed in 2017, there were no analyses to report in this addendum. For each of the 2017 sampling events, the measured groundwater elevations, with calculated groundwater flow rates and directions, have been included in Attachment 2.

Evergy Kansas Central, Inc. November 10, 2022 Page 2

The Attachments to this addendum are described below:

- Attachment 1 Laboratory Analytical Reports: Includes laboratory data packages with supporting information such as case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation. The laboratory data packages for the baseline sampling events completed in August, September, November, and December 2016, and February, April, May, and June 2017 are provided.
 - Since groundwater samples were collected from multiple units during each baseline sampling event, analytical data included in these laboratory analytical reports may include data from monitoring wells not associated with the FGD Landfill.
- Attachment 2 Groundwater Potentiometric Maps: Includes the measured groundwater elevations at each well and the generalized groundwater flow direction and calculated flow rate. Maps for the sampling events completed in August, September, November, and December 2016, and February, April, May, and June 2017 are provided.



ATTACHMENT 1 Laboratory Analytical Reports

ATTACHMENT 1-1
August 2016 Sampling Event
Laboratory Analytical Report





September 19, 2016

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Atartos M. Wilson

Heather Wilson heather.wilson@pacelabs.com

Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification Idaho Certification Illinois Certification

Indiana Certification
Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457 New York/TNI Certification #: 10888

North Carolina Certification #: 42706 North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868

West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60226362001	FAA2-082416	Water	08/24/16 13:13	08/25/16 06:38
60226362002	FGD1-082416	Water	08/24/16 14:52	08/25/16 06:38
60226362003	FGD2-082416	Water	08/24/16 16:21	08/25/16 06:38
60226362004	DUP-082416	Water	08/24/16 09:30	08/25/16 06:38



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60226362001	FAA2-082416	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226362002	FGD1-082416	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0226362003	FGD2-082416	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226362004	DUP-082416	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 444593

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226362001,60226362002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1818091)
 - Calcium
- MSD (Lab ID: 1818092)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 444573

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226362001,60226548004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1818005)
 - Mercury
- MSD (Lab ID: 1818006)
 - Mercury



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: EPA 903.1

Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 232205

1e: Ra-228 detected in MB, samples with results below RL or associated MDC are reportable without additional qualification. Elevated MB activity is due to radon daughter interference during counting.

- DUP-082416 (Lab ID: 60226362004)
 - Radium-228
- FAA2-082416 (Lab ID: 60226362001)
 - Radium-228
- FGD1-082416 (Lab ID: 60226362002)
 - Radium-228

2e: The Ra-228 MB was initially greater than the RL of 1.0 pCi/L. Samples with results greater than 1.0 pCi/L were re-ingrowthed and re-analyzed with the MB. This is the result for the re-analysis of the MB.

- BLANK (Lab ID: 1138233)
 - Radium-228

3e: The Ra-228 MB was initially greater than the RL of 1.0 pCi/L. Samples with results greater than 1.0 pCi/L were re-ingrowthed and re-analyzed with the MB. This is the result for the re-analysis of this sample.

- FGD2-082416 (Lab ID: 60226362003)
 - Radium-228



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: September 19, 2016

General Information:

4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

• DUP-082416 (Lab ID: 60226362004)

• FAA2-082416 (Lab ID: 60226362001)

• FGD1-082416 (Lab ID: 60226362002)

• FGD2-082416 (Lab ID: 60226362003)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 19, 2016

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

Sample: FAA2-082416	Lab ID: 602	226362001	Collected: 08/24/1	6 13:13	Received: 08	8/25/16 06:38 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.027	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:16	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:16	7440-41-7	
Boron, Total Recoverable	3.5	mg/L	0.10	1		08/30/16 12:16		
Calcium, Total Recoverable	301	mg/L	0.10	1		08/30/16 12:16		M1
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:16		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:16		
Lithium	0.014	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:16	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:11	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:11	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	09/01/16 11:07	7440-43-9	
Cobalt, Total Recoverable	0.0012	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:11	7440-48-4	
Molybdenum, Total Recoverable	0.20	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:07	7439-98-7	
Selenium, Total Recoverable	0.0020	mg/L	0.0010	1		08/30/16 13:11		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:11	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:09	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	2940	mg/L	5.0	1		08/29/16 09:39		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	7.3	Std. Units	0.10	1		08/26/16 11:30		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	.0					
Chloride	83.6	mg/L	10.0	10		09/08/16 17:36	16887-00-6	
Fluoride	0.55	mg/L	0.20	1		09/07/16 15:42	16984-48-8	
Sulfate	1970	mg/L	200	200		09/08/16 17:50	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

Sample: FGD1-082416	Lab ID: 602	226362002	Collected: 08/24/1	6 14:52	Received: 08	/25/16 06:38 N	Natrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.29	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:22	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:22	7440-41-7	
Boron, Total Recoverable	0.12	mg/L	0.10	1		08/30/16 12:22		
Calcium, Total Recoverable	95.7	mg/L	0.10	1		08/30/16 12:22		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:22		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:22		
_ithium	0.015	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:22	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:15	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:15	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	08/30/16 13:15	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:15	7440-48-4	
Molybdenum, Total Recoverable	0.0015	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:15	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		08/30/16 13:15		
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:15	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	543	mg/L	5.0	1		08/29/16 09:39		
1500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.5	Std. Units	0.10	1		08/26/16 11:30		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	44.5	mg/L	5.0	5		09/08/16 18:05	16887-00-6	
Fluoride	0.30	mg/L	0.20	1		09/07/16 15:56	16984-48-8	
Sulfate	91.3	mg/L	5.0	5		09/08/16 18:05	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

Sample: FGD2-082416	Lab ID: 602	26362003	Collected: 08/24/1	6 16:21	Received: 08	/25/16 06:38 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.078	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:27	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:27	7440-41-7	
Boron, Total Recoverable	0.26	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:27	7440-42-8	
Calcium, Total Recoverable	121	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:27	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:27	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:27	7439-92-1	
_ithium	<0.010	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:27	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:28	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:28	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	08/30/16 13:28	7440-43-9	
Cobalt, Total Recoverable	0.0011	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:28	7440-48-4	
Molybdenum, Total Recoverable	0.0047	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:28	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:28	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:28	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	643	mg/L	5.0	1		08/29/16 09:41		
1500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		08/26/16 11:30		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	31.7	mg/L	2.0	2		09/08/16 18:33	16887-00-6	
Fluoride	0.36	mg/L	0.20	1		09/07/16 16:10		
Sulfate	181	mg/L	20.0	20		09/08/16 18:48		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

Sample: DUP-082416	Lab ID: 602	226362004	Collected: 08/24/1	6 09:30	Received: 08	/25/16 06:38 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.29	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:29	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:29	7440-41-7	
Boron, Total Recoverable	0.12	mg/L	0.10	1		08/30/16 12:29		
Calcium, Total Recoverable	95.4	mg/L	0.10	1		08/30/16 12:29		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:29		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:29		
Lithium	0.017	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:29	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:42	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:42	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	08/30/16 13:42	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:42	7440-48-4	
Molybdenum, Total Recoverable	0.0014	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:42	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		08/30/16 13:42		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:42	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	i.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	532	mg/L	5.0	1		08/29/16 09:41		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		08/26/16 11:30		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	43.6	mg/L	5.0	5		09/08/16 19:31	16887-00-6	
Fluoride	0.30	mg/L	0.20	1		09/07/16 16:54	16984-48-8	
Sulfate	90.4	mg/L	5.0	5		09/08/16 19:31	14808-79-8	



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

QC Batch: 444573 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1818003 Matrix: Water
Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury ug/L <0.20 0.20 08/30/16 10:58

LABORATORY CONTROL SAMPLE: 1818004

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.9 98 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1818005 1818006

MS MSD 60226362001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 3.2 70-130 20 M1 Mercury ug/L < 0.20 3.1 63 63 0

 MATRIX SPIKE SAMPLE:
 1818007

 60226548004
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

 Mercury
 ug/L
 <0.20</th>
 5
 3.8
 76
 70-130

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

QC Batch: 444593 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1818089 Matrix: Water
Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

	,				
Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
				7 11 laly 20 d	
Barium	mg/L	< 0.010	0.010	08/30/16 12:13	
Beryllium	mg/L	< 0.0010	0.0010	08/30/16 12:13	
Boron	mg/L	<0.10	0.10	08/30/16 12:13	
Calcium	mg/L	< 0.10	0.10	08/30/16 12:13	

Chromium	mg/L	< 0.0050	0.0050	08/30/16 12:13
Lead	mg/L	< 0.0050	0.0050	08/30/16 12:13
Lithium	mg/L	<0.010	0.010	08/30/16 12:13

LABORATORY	CONTROL	SAMPLE:	1818090
LADONAIONI	CONTINUL	OCIVII LL.	1010030

Date: 09/19/2016 03:57 PM

	1010000	Spike	LCS	LCS	% Rec	0 117
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	1	1.1	107	85-115	
Beryllium	mg/L	1	1.1	108	85-115	
Boron	mg/L	1	1.0	105	85-115	
Calcium	mg/L	10	10.6	106	85-115	
Chromium	mg/L	1	1.1	106	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.1	106	85-115	

MATRIX SPIKE & MATRIX SP	IKE DUPLI	CATE: 18180	91 MS	MSD	1818092							
		60226362001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.027	1	1	1.1	1.1	107	106	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.1	1.1	108	107	70-130	1	20	
Boron	mg/L	3.5	1	1	4.7	4.7	114	118	70-130	1	20	
Calcium	mg/L	301	10	10	315	314	144	132	70-130	0	20	M1
Chromium	mg/L	< 0.0050	1	1	1.0	1.0	104	103	70-130	0	20	
Lead	mg/L	< 0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lithium	mg/L	0.014	1	1	1.2	1.1	115	113	70-130	1	20	

MATRIX SPIKE SAMPLE:	1818093	60226362002	Spiko	MS	MS	% Rec	
Parameter	Units	Result	Spike Conc.	Result	% Rec	% Rec	Qualifiers
Barium	 mg/L	0.29	1	1.4	107	70-130	
Beryllium	mg/L	< 0.0010	1	1.1	108	70-130	
Boron	mg/L	0.12	1	1.2	107	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

MATRIX SPIKE SAMPLE:	1818093		0 "			a. .	
Parameter	Units	60226362002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	 mg/L	95.7	10	107	114	70-130	
Chromium	mg/L	< 0.0050	1	1.0	104	70-130	
Lead	mg/L	< 0.0050	1	1.0	102	70-130	
Lithium	mg/L	0.015	1	1.1	108	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

QC Batch: 444594 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1818095 Matrix: Water
Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/30/16 13:06	
Arsenic	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Cadmium	mg/L	< 0.00050	0.00050	08/30/16 13:06	
Cobalt	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Molybdenum	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Selenium	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Thallium	ma/L	< 0.0010	0.0010	08/30/16 13:06	

LABORATORY CONTROL SAMPLE:	1818096					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.041	103	85-115	
Cadmium	mg/L	.04	0.041	102	85-115	
Cobalt	mg/L	.04	0.041	103	85-115	
Molybdenum	mg/L	.04	0.042	106	85-115	
Selenium	mg/L	.04	0.041	103	85-115	
Thallium	mg/L	.04	0.039	96	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 181809	97		1818098							
Parameter	6 Units	60226362003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	.04	.04	0.040	0.041	99	102	70-130	3	20	
Arsenic	mg/L	< 0.0010	.04	.04	0.041	0.042	101	104	70-130	3	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.039	0.040	97	100	70-130	3	20	
Cobalt	mg/L	0.0011	.04	.04	0.040	0.041	97	99	70-130	2	20	
Molybdenum	mg/L	0.0047	.04	.04	0.049	0.051	112	115	70-130	2	20	
Selenium	mg/L	< 0.0010	.04	.04	0.039	0.041	96	101	70-130	5	20	
Thallium	mg/L	<0.0010	.04	.04	0.040	0.041	99	103	70-130	3	20	

MATRIX SPIKE SAMPLE:	1818099						
		60226362004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.041	102	70-130	
Arsenic	mg/L	< 0.0010	.04	0.041	102	70-130	
Cadmium	mg/L	< 0.00050	.04	0.040	100	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

MATRIX SPIKE SAMPLE:	1818099						
		60226362004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.041	99	70-130	
Molybdenum	mg/L	0.0014	.04	0.047	114	70-130	
Selenium	mg/L	< 0.0010	.04	0.040	99	70-130	
Thallium	mg/L	<0.0010	.04	0.041	101	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

QC Batch: 444473 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1817794 Matrix: Water

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/29/16 09:33

LABORATORY CONTROL SAMPLE: 1817795

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 960 96 80-120

SAMPLE DUPLICATE: 1817796

60226258001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1860 8 **Total Dissolved Solids** 1720 10 mg/L

SAMPLE DUPLICATE: 1817797

Date: 09/19/2016 03:57 PM

60226362002 Dup Max RPD RPD Parameter Units Result Result Qualifiers 543 **Total Dissolved Solids** mg/L 541 0 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

QC Batch: 444278 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

SAMPLE DUPLICATE: 1816699

Date: 09/19/2016 03:57 PM

 Parameter
 Units
 Result
 Dup Result
 RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 8.2
 8.2
 0
 5 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

QC Batch: 445543 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1821465 Matrix: Water
Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 09/07/16 10:05

LABORATORY CONTROL SAMPLE: 1821466

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.6 103 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1821467 1821468

MS MSD 60226141001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride 80-120 2 mg/L 0.64 2.5 2.5 3.1 3.1 96 99 15

MATRIX SPIKE SAMPLE: 1821469 MS 60226141002 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers 0.29 2.7 80-120 Fluoride mg/L 2.5 95

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

QC Batch: 445717 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1822153 Matrix: Water
Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

Blank Reporting

Parameter Result Limit Qualifiers Units Analyzed Chloride <1.0 1.0 09/08/16 10:52 mg/L Sulfate mg/L <1.0 1.0 09/08/16 10:52

LABORATORY CONTROL SAMPLE: 1822154

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 5 4.8 96 90-110 Sulfate mg/L 5 5.0 100 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822155 1822156

		60226095001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	263	100	100	367	372	104	109	80-120	1	15	
Sulfate	mg/L	137	50	50	187	186	100	97	80-120	1	15	

MATRIX SPIKE SAMPLE: 1822157

Date: 09/19/2016 03:57 PM

Parameter	Units	60226141001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	96.8	50	146	98	80-120	
Sulfate	mg/L	1010	500	1500	99	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Sample: FAA2-082416 Lab ID: 60226362001 Collected: 08/24/16 13:13 Received: 08/25/16 06:38 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.581 ± 0.408 (0.197) C:NA T:86%	pCi/L	09/14/16 21:55	13982-63-3	
Radium-228	EPA 904.0	-0.223 ± 0.392 (0.949) C:75% T:85%	pCi/L	09/13/16 22:30	15262-20-1	1e



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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Sample: FGD1-082416 Lab ID: 60226362002 Collected: 08/24/16 14:52 Received: 08/25/16 06:38 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.287 ± 0.346 (0.528) C:NA T:84%	pCi/L	09/14/16 21:55	13982-63-3	
Radium-228	EPA 904.0	0.133 ± 0.365 (0.816) C:75% T:84%	pCi/L	09/13/16 21:59	15262-20-1	1e



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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Sample: FGD2-082416 Lab ID: 60226362003 Collected: 08/24/16 16:21 Received: 08/25/16 06:38 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.149 ± 0.506 (0.976) C:NA T:78%	pCi/L	09/14/16 21:55	13982-63-3	,
Radium-228	EPA 904.0	0.654 ± 0.446 (0.853) C:78% T:69%	pCi/L	09/19/16 11:56	15262-20-1	3e



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Sample: DUP-082416 Lab ID: 60226362004 Collected: 08/24/16 09:30 Received: 08/25/16 06:38 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.140 ± 0.434 (0.840) C:NA T:86%	pCi/L	09/14/16 22:07	13982-63-3	
Radium-228	EPA 904.0	0.702 ± 0.447 (0.850) C:73% T:85%	pCi/L	09/13/16 22:00	15262-20-1	1e



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

QC Batch: 232205 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1138233 Matrix: Water

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed Qualifiers
Radium-228	0.570 ± 0.366 (0.673) C:75% T:77%	pCi/L	09/19/16 11:56 2e
Radium-228	1.24 ± 0.469 (0.713) C:83% T:85%	pCi/L	09/13/16 21:59

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

QC Batch: 232199 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

METHOD BLANK: 1138222 Matrix: Water

Associated Lab Samples: 60226362001, 60226362002, 60226362003, 60226362004

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 -0.153 ± 0.369 (0.922) C:NA T:87% pCi/L 09/14/16 12:07

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 09/19/2016 03:57 PM

1e	Ra-228 detected in MB, samples with results below RL or associated MDC are reportable without additional qualification.
	Flevated MR activity is due to radon daughter interference during counting

- The Ra-228 MB was initially greater than the RL of 1.0 pCi/L. Samples with results greater than 1.0 pCi/L were reingrowthed and re-analyzed with the MB. This is the result for the re-analysis of the MB.
- 3e The Ra-228 MB was initially greater than the RL of 1.0 pCi/L. Samples with results greater than 1.0 pCi/L were reingrowthed and re-analyzed with the MB. This is the result for the re-analysis of this sample.
- H6 Analysis initiated outside of the 15 minute EPA required holding time.
- M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226362

Date: 09/19/2016 03:57 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60226362001	FAA2-082416	EPA 200.7	444593	EPA 200.7	444654
60226362002	FGD1-082416	EPA 200.7	444593	EPA 200.7	444654
0226362003	FGD2-082416	EPA 200.7	444593	EPA 200.7	444654
60226362004	DUP-082416	EPA 200.7	444593	EPA 200.7	444654
60226362001	FAA2-082416	EPA 200.8	444594	EPA 200.8	444657
60226362002	FGD1-082416	EPA 200.8	444594	EPA 200.8	444657
60226362003	FGD2-082416	EPA 200.8	444594	EPA 200.8	444657
60226362004	DUP-082416	EPA 200.8	444594	EPA 200.8	444657
60226362001	FAA2-082416	EPA 245.1	444573	EPA 245.1	444600
60226362002	FGD1-082416	EPA 245.1	444573	EPA 245.1	444600
60226362003	FGD2-082416	EPA 245.1	444573	EPA 245.1	444600
60226362004	DUP-082416	EPA 245.1	444573	EPA 245.1	444600
60226362001	FAA2-082416	EPA 903.1	232199		
60226362002	FGD1-082416	EPA 903.1	232199		
60226362003	FGD2-082416	EPA 903.1	232199		
60226362004	DUP-082416	EPA 903.1	232199		
60226362001	FAA2-082416	EPA 904.0	232205		
60226362002	FGD1-082416	EPA 904.0	232205		
60226362003	FGD2-082416	EPA 904.0	232205		
60226362004	DUP-082416	EPA 904.0	232205		
60226362001	FAA2-082416	SM 2540C	444473		
60226362002	FGD1-082416	SM 2540C	444473		
60226362003	FGD2-082416	SM 2540C	444473		
60226362004	DUP-082416	SM 2540C	444473		
60226362001	FAA2-082416	SM 4500-H+B	444278		
60226362002	FGD1-082416	SM 4500-H+B	444278		
60226362003	FGD2-082416	SM 4500-H+B	444278		
60226362004	DUP-082416	SM 4500-H+B	444278		
60226362001	FAA2-082416	EPA 300.0	445543		
60226362001	FAA2-082416	EPA 300.0	445717		
60226362002	FGD1-082416	EPA 300.0	445543		
60226362002	FGD1-082416	EPA 300.0	445717		
60226362003	FGD2-082416	EPA 300.0	445543		
60226362003	FGD2-082416	EPA 300.0	445717		
60226362004	DUP-082416	EPA 300.0	445543		
60226362004	DUP-082416	EPA 300.0	445717		



Sample Condition Upon Receipt



			Man
Client Name: Wester Energy			Optional
Courier: FedEx □ UPS □ VIA Ø Clay □	PEX DECID	Pace □ Other □ Clie	nt □ Proj Due Date:
Tracking #:	Pace Shipping Label \	Jsed? Yes □ No □	Proj Name:
Custody Seal on Cooler/Box Present: Yes	No □ Seals intact: Y	′es ☑ No □	
	Bags Foam [□ None □ Oth	ner 🗆
Thermometer Used: (T-266 / T-239			ived on ice, cooling process has begun.
Cooler Temperature:	(circle	Date and contents	d initials of person examining s: pv8/25/16
Chain of Custody present:	Yes □No □N/A	1.	
Chain of Custody filled out:	Yes □No □N/A	2,	
Chain of Custody relinquished:	Yes □No □N/A	3.	
Sampler name & signature on COC;	Yes □No □N/A	4.	
Samples arrived within holding time:	Yes □No □N/A	5.	
Short Hold Time analyses (<72hr):	Ves □No □N/A	6. PH	
Rush Turn Around Time requested:	□Yes ☑No □N/A	7.	
Sufficient volume:	✓Yes □No □N/A	8.	
Correct containers used:	Yes □No □N/A		
Pace containers used:	Yes □No □N/A	9.	
Containers intact:	Yes No N/A	10.	
Unpreserved 5035A soils frozen w/in 48hrs?	□Yes □No ☑N/A	11,	
Filtered volume received for dissolved tests?	□Yes □No ∕□N/A	12.	
Sample labels match COC:	Yes □No □N/A		
Includes date/time/ID/analyses Matrix:	WT	13.	
All containers needing preservation have been checked.	Øes □No □N/A		
All containers needing preservation are found to be in compli- with EPA recommendation.	ance Yes □No □N/A	14.	
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	□Yes ✓ No	Initial when completed	Lot # of added preservative
Trip Blank present:	□Yes □No □N/A		
Pace Trip Blank lot # (if purchased):		15.	
Headspace in VOA vials (>6mm):	□Yes □No ZN/A		
		16.	
Project sampled in USDA Regulated Area:	□Yes □No □N/A	17. List State:	
Additional labels attached to 5035A vials in the field?	□Yes □No □N/A	18.	
	by COC to Client? Y / N		? Y / N
Person Contacted:	Date/Time:		
Comments/ Resolution:) -		
A a		01-01	
Project Manager Review:		Date: 8/25/16	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	Section B Required Project Information:		Section C Invoice Information:			Page: of
Company: WESTAR ENERGY	Report To: Brandon Griffin		Attention: Jared Morrison			
Address: 818 Kansas Ave	Copy To: Jared Morrison,	, Heath Hornya	Company Name: WESTAR ENER	GY REGU	JLATORY AGENCY	
Topeka, KS 66612			Address: SEE SECTION A	V √	IPDES GROUN	ND WATER TO DRINKING WATER
Email To: brandon.l.griffin@westarenergy.com	Purchase Order No.:		Pace Quote Reference:	гυ	JST F RCRA	
Phone: (785) 575-8135 Fax:	Project Name: JEC CCR (Groundwater	Pace Project Heather Wilson, 913	3-563-1407 Site L	Location	
Requested Due Date/TAT: 7 DAY	Project Number:		Pace Profile #: 9657, 1		STATE: KS	— (////////////////////////////////////
				Requested Analys	is Filtered (Y/N)	
Section D Valid Matrix Co Required Client Information MATRIX	CODE (H) (A) (A)	COLLECTED	Preservatives	×		
WATER WASTE WATER PRODUCT SOIL/SOLID OIL SAMPLEID WIPE	SE GRABIId	OMPOSITE COMPOSITE ENDIGRAB	.Rs	rest the Metals* Metals** Mercury SO4		ne (Y/N)
(A-Z, 0-9 / ,-) OTHER	MATRIX CODE st to st st stand stand stand stand stands sample type (6	SAMPLE TEMP AT	# OF CONTAINERS Unpreserved H ₂ SO ₄ HNO ₃ HCI NaOH Na ₂ S ₂ O ₃ Methanol	# Analysis Test # 200.7 Total Metals** 200.8 Total Metals*** 245.1 Total Mercury 300.0 Cl, Fl, SO4 4500 H+B	Radium 226	Residual Chlorine (Y/N) Pace Project No./ Lab I.D.
1 FAA2-082416	WT G	8/24/11/313	413	- W W W W W		IRPZU IBPZNO ZBPIN OI
2 FGD1-082416	WT G	8/24/11452	413			1 1 002
3 FGD2-082416	WT G	8/24N 1621	413			1 L 602
4						
5						
6		8 1 E - 1 A 72 E				
7						
8						
9 DUP-082416	WIG	8/24/10930	413			1 1 1 04
10	長年 日本 ※			· 图 · 图 · 图 · 图 · 图 · 图 · 图 · 图 · 图 · 图		
11	9 9 8 9		THELLIG NEW		- 1	
12						
ADDITIONAL COMMENTS	RELINQUISHED B	AFFILIATION DATE	TIME ACCEPTED	BY / AFFILIATION	DATE TIME	SAMPLE CONDITIONS
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	1977/1	restar 8/24/	1655 April	44= 8	3/25/16 0630	1.9 7 4 7
**200 8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tt	7.0.0.					
	E H		4 37 + 8 - 2 1			
Page					3 7.	1: 2
ge 35 of 37	75.	SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER SIGNATURE of SAMPLER	Brandon Grit	DATE Signed (MM/DD/YY): 08/	24/16	Received on Ice (Y/N) Custody Sealed Cooler (Y/N) Samples Intact (Y/N)

Chain of Custody

WO#:30194283





Workorder: 60226362

Workorder Name: JEC CCR GROUNDWATER

Owner Received Date: 8/25/2016 Results Requested By: 9/19/2016

Repo	nt To		Name: JEC CC		VAICE	nii din di	OWI	er Rec	erved	ם ג •	te: 6/2	Requeste		·	ueste	аву:	9/19/2016
Pace / 9608 I Lenex	ier Wilson Analytical Kansas Loiret Blvd. ka, KS 66219 e (913)599-5665		1638 R Suites Greens	nalytical Pittsbu loseytown Road 2,3, & 4 sburg, PA 1560 (724)850-5600	1												
Item	Sample ID	Sample Type	Collect Date/Tim e	Lab ID	Matrix	BP1N	served Gon	tainers	Radium-226	Radium-228							LAB USE ONLY
1	FAA2-082416	PS	8/24/2016 13:13	60226362001	Water	2			X	X	 	+++	 				SOI -
2	FGD1-082416	PS	8/24/2016 14:52	60226362002	Water	2			$\frac{1}{x}$	X			++			 	002
3	FGD2-082416	PS	8/24/2016 16:21	60226362003	Water	2		1 1	X	X						 	003
4	DUP-082416	PS	8/24/2016 09:30	60226362004	Water	2			Х	X							<i>©</i> 4
5 Trans	 		Date/Time	Received B				Date/Ti	me					Comm	ents		
1 2	1/4/8/4	- Par	0/25/16 1-	700 Kwien	-	ı		81210/14		o							
3							,,	+		\dashv							
Coo	ler Temperature on l	Receipt NIA	°C Cus	tody Seal (Ŷ	or N		Rece	eived o	n Ice	Y	or (N	D		Samp	les In	tact/\	or N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

ည်း တို့ သို့ Tritirsday, August 25, 2016 9:20:24 AM

Sample Condition Upon Receipt Pittsburgh

30194283

Face Analytical	Client Name:	P	ace	Ko	nsas	Project#
	UPS USPS Clier	nt 🗆	Comm	ercial	☐ Pace Other _	
Tracking #: <u>6703</u>			-		 / .	
-	r/Box Present:				<u>=</u>	」 no
Thermometer Used	<u>NIA</u>	Type	of Ice:	: We	t Blue None	A °C Final Tamp: N 1/A °C
Cooler Temperature		15		Con	rection Factor: NV	A °C Final Temp: NIA °C
Temp should be above freez	ang to 6°C					Date and Initials of person examining contents:
Comments:		Yes	No	N/A	a	contents: KSK 8126/16
Chain of Custody Present	<u> </u>	1			1.	
Chain of Custody Filled O		1			2.	
Chain of Custody Relinqui		1			3.	
Sampler Name & Signatur			1		4.	
Sample Labels match CO		1			5.	
-Includes date/time/ID/	'Analysis Matrix: N	+			1	
Samples Arrived within Ho		V			6.	
Short Hold Time Analysi			/		7.	·
Rush Turn Around Time		/			8.	
Sufficient Volume:		1			9.	
Correct Containers Used:	·····	/			10.	
-Pace Containers Used	f:	/			1	
Containers Intact:		1			11.	
Filtered volume received for					12.	
All containers needing preserva	tion have been checked.	/			13. pH < 2	
All containers needing preserv	vation are found to be in	1				
compliance with EPA recomm	endation.	- 1			Initial whom	Date/time of
exceptions: VOA, coliforn	n, TOC, O&G, Phenolics				Initial when KA	preservation
					Lot # of added preservative	
Headspace in VOA Vials (>6mm):			./	14.	
Trip Blank Present:	- Ortani).			-	15.	·
Trip Blank Custody Seals F	Present			1	10.	ļ
Rad Aqueous Samples S			1		Initial when completed:	Date: 8/2/9/10
Client Notification/ Resol	ution:					
Person Contacted:_			t	Date/`	ſime:	Contacted By:
Comments/ Resolution:_						
				•		
						-

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.





September 20, 2016

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson

Markon M. Wilson

heather.wilson@pacelabs.com Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY Adam Kneeling, Haley & Aldrich, Inc. JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

tew sersey/ five serial called #1.174 con

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60226548001	FGD3-082516	Water	08/25/16 09:46	08/27/16 06:15
60226548002	FGD4-082516	Water	08/25/16 11:46	08/27/16 06:15
60226548003	BAA6-082516	Water	08/25/16 13:43	08/27/16 06:15
60226548004	BAA3-082616	Water	08/26/16 10:58	08/27/16 06:15
60226548005	BAA4-082616	Water	08/26/16 12:07	08/27/16 06:15
60226548006	BAA2-082516	Water	08/25/16 15:52	08/27/16 06:15
60226548007	DUP-082516	Water	08/25/16 08:00	08/27/16 06:15



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60226548001	FGD3-082516	EPA 200.7	MDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0226548002	FGD4-082516	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0226548003	BAA6-082516	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0226548004	BAA3-082616	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0226548005	BAA4-082616	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc..



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226548006	BAA2-082516	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226548007	DUP-082516	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 444593

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226362001,60226362002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1818091)
 - Calcium
- MSD (Lab ID: 1818092)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 444573

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226362001,60226548004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1818005)
 - Mercury
- MSD (Lab ID: 1818006)
 - Mercury



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: EPA 903.1

Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

The MB for Ra-228 batch 31271 has an activity equal to the required RL of 1.0 pCi/L. Data is all reportable w/narration.

• QC Batch: 232375



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: September 20, 2016

General Information:

7 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- BAA2-082516 (Lab ID: 60226548006)
- BAA3-082616 (Lab ID: 60226548004)
- BAA4-082616 (Lab ID: 60226548005)
- BAA6-082516 (Lab ID: 60226548003)
- DUP-082516 (Lab ID: 60226548007)
- FGD3-082516 (Lab ID: 60226548001)
- FGD4-082516 (Lab ID: 60226548002)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 20, 2016

General Information:

7 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 445893

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226890002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MSD (Lab ID: 1822829)

• Chloride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: FGD3-082516	Lab ID: 602	226548001	Collected: 08/25/1	6 09:46	Received: 08	3/27/16 06:15 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.23	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:35	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:35	7440-41-7	
Boron, Total Recoverable	0.13	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:35	7440-42-8	
Calcium, Total Recoverable	142	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:35	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:35	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		08/30/16 12:35		
_ithium	0.015	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:35	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:51	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:51	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	08/30/16 13:51	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:51	7440-48-4	
Molybdenum, Total Recoverable	0.0071	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:51	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:51	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:51	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	692	mg/L	5.0	1		08/31/16 08:26		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		08/29/16 09:30		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	52.4	mg/L	5.0	5		09/08/16 20:29	16887-00-6	
Fluoride	0.25	mg/L	0.20	1		09/07/16 17:08	16984-48-8	
Sulfate	213	mg/L	20.0	20		09/08/16 21:12	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: FGD4-082516	Lab ID: 602	226548002	Collected: 08/25/1	6 11:46	Received: 08	3/27/16 06:15 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.064	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:38	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:38	3 7440-41-7	
Boron, Total Recoverable	0.30	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:38	3 7440-42-8	
Calcium, Total Recoverable	166	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:38	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:38	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:38	7439-92-1	
Lithium	0.013	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:38	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:55	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:55	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	08/30/16 13:55	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:55	7440-48-4	
Molybdenum, Total Recoverable	0.0046	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:55	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:55	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:55	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	831	mg/L	5.0	1		08/31/16 08:27	•	
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
pH at 25 Degrees C	7.6	Std. Units	0.10	1		08/29/16 09:30)	H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	71.8	mg/L	5.0	5		09/08/16 22:24	16887-00-6	
Fluoride	0.31	mg/L	0.20	1		09/07/16 17:23		
Sulfate	331	mg/L	50.0	50		09/08/16 22:38		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: BAA6-082516	Lab ID: 602	226548003	Collected: 08/25/1	6 13:43	Received: 08	/27/16 06:15 N	Natrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.039	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:40	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:40	7440-41-7	
Boron, Total Recoverable	5.8	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:40	7440-42-8	
Calcium, Total Recoverable	495	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:40	7440-70-2	
Chromium, Total Recoverable	0.0060	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:40	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:40	7439-92-1	
Lithium	0.16	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:40	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:59	7440-36-0	
Arsenic, Total Recoverable	0.0037	mg/L	0.0010	1	08/29/16 16:30			
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	09/01/16 11:12	7440-43-9	
Cobalt, Total Recoverable	0.0016	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:12	7440-48-4	
Molybdenum, Total Recoverable	0.0090	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:12	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:12	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 13:59	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	3210	mg/L	5.0	1		08/31/16 08:28		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		08/29/16 09:30		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	.0					
Chloride	288	mg/L	20.0	20		09/08/16 22:53	16887-00-6	
Fluoride	0.88	mg/L	0.20	1		09/07/16 17:37		
Sulfate	1790	mg/L	200	200		09/08/16 23:07		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: BAA3-082616	Lab ID: 602	226548004	Collected: 08/26/1	6 10:58	Received: 08	3/27/16 06:15 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.050	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:42	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:42	7440-41-7	
Boron, Total Recoverable	2.4	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:42	7440-42-8	
Calcium, Total Recoverable	526	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:42	7440-70-2	
Chromium, Total Recoverable	0.011	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:42	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:42	7439-92-1	
Lithium	0.10	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:42	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 14:04	7440-36-0	
Arsenic, Total Recoverable	0.0022	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:16	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	09/01/16 11:16	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:16	7440-48-4	
Molybdenum, Total Recoverable	0.0026	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:16	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:16	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 14:04	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3250	mg/L	5.0	1		08/31/16 08:31		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.6	Std. Units	0.10	1		08/29/16 09:30		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	146	mg/L	20.0	20		09/08/16 23:21	16887-00-6	
Fluoride	0.97	mg/L	0.20	1		09/07/16 17:51	16984-48-8	
Sulfate	1900	mg/L	200	200		09/08/16 23:36	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: BAA4-082616	Lab ID: 602	226548005	Collected: 08/26/1	6 12:07	Received: 08	/27/16 06:15 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.032	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:45	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:45	7440-41-7	
Boron, Total Recoverable	0.91	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:45	7440-42-8	
Calcium, Total Recoverable	403	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:45	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:45	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:45	7439-92-1	
Lithium	0.015	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:45	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:20	7440-36-0	
Arsenic, Total Recoverable	0.0065	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:20	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	09/01/16 11:20	7440-43-9	
Cobalt, Total Recoverable	0.027	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:20	7440-48-4	
Molybdenum, Total Recoverable	0.11	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:20	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:20	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:20	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	4070	mg/L	5.0	1		08/31/16 08:32		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.0	Std. Units	0.10	1		08/30/16 12:35		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	0.0					
Chloride	177	mg/L	20.0	20		09/08/16 23:50	16887-00-6	
Fluoride	0.26	mg/L	0.20	1		09/07/16 18:06		
Sulfate	2310	mg/L	200	200		09/09/16 00:05		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: BAA2-082516	Lab ID: 602	226548006	Collected: 08/25/1	6 15:52	Received: 08	/27/16 06:15 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.067	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:47	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:47	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:47	7440-42-8	
Calcium, Total Recoverable	224	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:47	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:47	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:47	7439-92-1	
Lithium	0.013	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:47	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 14:22	7440-36-0	
Arsenic, Total Recoverable	0.0059	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:25	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	09/01/16 11:25	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:25	7440-48-4	
Molybdenum, Total Recoverable	0.051	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:25	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:25	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 14:22	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	1510	mg/L	5.0	1		08/31/16 08:28		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.3	Std. Units	0.10	1		08/29/16 09:30	1	H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	0.0					
Chloride	163	mg/L	20.0	20		09/09/16 00:19	16887-00-6	
Fluoride	0.44	mg/L	0.20	1		09/07/16 18:20		
Sulfate	783	mg/L	100	100		09/09/16 00:33		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Sample: DUP-082516	Lab ID: 602	226548007	Collected: 08/25/1	6 08:00	Received: 08	/27/16 06:15 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.059	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:49	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 12:49	7440-41-7	
Boron, Total Recoverable	1.4	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:49	7440-42-8	
Calcium, Total Recoverable	234	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:49	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:49	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	08/29/16 16:30	08/30/16 12:49	7439-92-1	
Lithium	0.012	mg/L	0.010	1	08/29/16 16:30	08/30/16 12:49	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 14:26	7440-36-0	
Arsenic, Total Recoverable	0.0063	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:29	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/16 16:30	09/01/16 11:29	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:29	7440-48-4	
Molybdenum, Total Recoverable	0.056	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:29	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	09/01/16 11:29	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/16 16:30	08/30/16 14:26	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.20	ug/L	0.20	1	08/29/16 15:05	08/30/16 11:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	oc					
Total Dissolved Solids	1560	mg/L	5.0	1		08/31/16 08:29	1	
1500H+ pH, Electrometric	Analytical Met	hod: SM 450	D-H+B					
oH at 25 Degrees C	7.6	Std. Units	0.10	1		08/29/16 09:30	1	H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	169	mg/L	20.0	20		09/09/16 09:48	16887-00-6	
Fluoride	0.43	mg/L	0.20	1		09/07/16 18:35	16984-48-8	
Sulfate	868	mg/L	100	100		09/09/16 10:02	14808-79-8	



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

QC Batch: 444573 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1818003 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury ug/L <0.20 0.20 08/30/16 10:58

LABORATORY CONTROL SAMPLE: 1818004

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.9 98 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1818005 1818006

MS MSD 60226362001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 3.2 70-130 20 M1 Mercury ug/L < 0.20 3.1 63 63 0

MATRIX SPIKE SAMPLE: 1818007

MS 60226548004 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.20 5 3.8 76 70-130 Mercury ug/L

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

QC Batch: 444593 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1818089 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.010	0.010	08/30/16 12:13	
Beryllium	mg/L	< 0.0010	0.0010	08/30/16 12:13	
Boron	mg/L	<0.10	0.10	08/30/16 12:13	
Calcium	mg/L	<0.10	0.10	08/30/16 12:13	
Chromium	mg/L	< 0.0050	0.0050	08/30/16 12:13	
Lead	mg/L	< 0.0050	0.0050	08/30/16 12:13	
Lithium	ma/L	< 0.010	0.010	08/30/16 12:13	

LABORATORY CONTROL SAMPLE:	1818090					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.1	107	85-115	
Beryllium	mg/L	1	1.1	108	85-115	
Boron	mg/L	1	1.0	105	85-115	
Calcium	mg/L	10	10.6	106	85-115	
Chromium	mg/L	1	1.1	106	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.1	106	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 181809	91		1818092							
Parameter	6 Units	0226362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.027	1	1	1.1	1.1	107	106	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.1	1.1	108	107	70-130	1	20	
Boron	mg/L	3.5	1	1	4.7	4.7	114	118	70-130	1	20	
Calcium	mg/L	301	10	10	315	314	144	132	70-130	0	20	M1
Chromium	mg/L	< 0.0050	1	1	1.0	1.0	104	103	70-130	0	20	
Lead	mg/L	< 0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lithium	mg/L	0.014	1	1	1.2	1.1	115	113	70-130	1	20	

MATRIX SPIKE SAMPLE:	1818093						
		60226362002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.29	1	1.4	107	70-130	
Beryllium	mg/L	< 0.0010	1	1.1	108	70-130	
Boron	mg/L	0.12	1	1.2	107	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

MATRIX SPIKE SAMPLE:	1818093		0 "				
Parameter	Units	60226362002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	 mg/L	95.7	10	107	114	70-130	
Chromium	mg/L	< 0.0050	1	1.0	104	70-130	
Lead	mg/L	< 0.0050	1	1.0	102	70-130	
Lithium	mg/L	0.015	1	1.1	108	70-130	



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

QC Batch: 444594 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1818095 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/30/16 13:06	
Arsenic	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Cadmium	mg/L	< 0.00050	0.00050	08/30/16 13:06	
Cobalt	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Molybdenum	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Selenium	mg/L	< 0.0010	0.0010	08/30/16 13:06	
Thallium	ma/L	< 0.0010	0.0010	08/30/16 13:06	

LABORATORY CONTROL SAMPLE:	1818096					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.041	103	85-115	
Cadmium	mg/L	.04	0.041	102	85-115	
Cobalt	mg/L	.04	0.041	103	85-115	
Molybdenum	mg/L	.04	0.042	106	85-115	
Selenium	mg/L	.04	0.041	103	85-115	
Thallium	mg/L	.04	0.039	96	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 181809	97		1818098							
Parameter	6 Units	60226362003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	.04	.04	0.040	0.041	99	102	70-130	3	20	
Arsenic	mg/L	< 0.0010	.04	.04	0.041	0.042	101	104	70-130	3	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.039	0.040	97	100	70-130	3	20	
Cobalt	mg/L	0.0011	.04	.04	0.040	0.041	97	99	70-130	2	20	
Molybdenum	mg/L	0.0047	.04	.04	0.049	0.051	112	115	70-130	2	20	
Selenium	mg/L	< 0.0010	.04	.04	0.039	0.041	96	101	70-130	5	20	
Thallium	mg/L	<0.0010	.04	.04	0.040	0.041	99	103	70-130	3	20	

MATRIX SPIKE SAMPLE:	1818099						
		60226362004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.041	102	70-130	
Arsenic	mg/L	< 0.0010	.04	0.041	102	70-130	
Cadmium	mg/L	< 0.00050	.04	0.040	100	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

MATRIX SPIKE SAMPLE:	1818099						
		60226362004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.041	99	70-130	
Molybdenum	mg/L	0.0014	.04	0.047	114	70-130	
Selenium	mg/L	< 0.0010	.04	0.040	99	70-130	
Thallium	mg/L	<0.0010	.04	0.041	101	70-130	



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 444839 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1818813 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/31/16 08:25

LABORATORY CONTROL SAMPLE: 1818814

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 950 95 80-120

SAMPLE DUPLICATE: 1818815

Date: 09/20/2016 09:14 AM

60226548001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 692 0 **Total Dissolved Solids** 694 10 mg/L



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 444465 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548006, 60226548007

SAMPLE DUPLICATE: 1817774

Date: 09/20/2016 09:14 AM

 Parameter
 Units
 60226402001 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.7
 7.8
 1
 5 H6



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 444645 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60226548005

SAMPLE DUPLICATE: 1818235

Date: 09/20/2016 09:14 AM

 Parameter
 Units
 Result Result
 Result RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.0
 7.0
 1
 5 H6



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 445543 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1821465 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

Blank Reporting

 Parameter
 Units
 Result
 Limit
 Analyzed
 Qualifiers

 Fluoride
 mg/L
 <0.20</td>
 0.20
 09/07/16 10:05

LABORATORY CONTROL SAMPLE: 1821466

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.6 103 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1821467 1821468

MS MSD 60226141001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride 80-120 2 mg/L 0.64 2.5 2.5 3.1 3.1 96 15 99

MATRIX SPIKE SAMPLE: 1821469

Date: 09/20/2016 09:14 AM

MS 60226141002 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers 0.29 2.7 Fluoride mg/L 2.5 95 80-120



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Chloride

Date: 09/20/2016 09:14 AM

Sulfate

QC Batch: 445718 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006

METHOD BLANK: 1822161 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006

Blank Reporting Parameter Limit Qualifiers Units Result Analyzed <1.0 09/08/16 20:00 mg/L 1.0 mg/L <1.0 1.0 09/08/16 20:00

LABORATORY CONTROL SAMPLE: 1822162

Spike LCS LCS % Rec
Parameter Units Conc. Result % Rec Limits Qualifiers

 Chloride
 mg/L
 5
 4.8
 96
 90-110

 Sulfate
 mg/L
 5
 4.8
 96
 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822163 1822164 MSD MS 60226548001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 52.4 25 25 76.7 77.4 97 100 80-120 15 Sulfate mg/L 213 100 100 318 317 104 104 80-120 0 15

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 445893 QC Batch Method: EPA 300.0

93 Analysis Method: 300.0 Analysis Description: EPA 300.0 300.0 IC Anions

Associated Lab Samples: 60226548007

METHOD BLANK: 1822826

Matrix: Water

Associated Lab Samples:

Date: 09/20/2016 09:14 AM

Chloride Sulfate 60226548007

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
	mg/L	<1.0	1.0	09/09/16 09:11	
	ma/l	<1.0	1.0	09/09/16 09:11	

LABORATORY CONTROL SAMPLE:	1822827					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.9	97	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 18228	28		1822829							
			MS	MSD								
	6	0226890002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	238	100	100	337	360	99	122	80-120	7	15	M1
Sulfate	mg/L	171	100	100	266	282	95	111	80-120	6	15	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Sample: FGD3-082516 Lab ID: 60226548001 Collected: 08/25/16 09:46 Received: 08/27/16 06:15 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.622 ± 0.651 (1.02) C:NA T:75%	pCi/L	09/19/16 13:11	13982-63-3	
Radium-228	EPA 904.0	0.726 ± 0.547 (1.08) C:68% T:70%	pCi/L	09/14/16 22:13	15262-20-1	



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Sample: FGD4-082516 Lab ID: 60226548002 Collected: 08/25/16 11:46 Received: 08/27/16 06:15 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.388 ± 0.459 (0.721) C:NA T:74%	pCi/L	09/19/16 12:58	13982-63-3	
Radium-228	EPA 904.0	0.786 ± 0.561 (1.09) C:73% T:69%	pCi/L	09/14/16 22:37	15262-20-1	





ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

PWS: Site ID: Sample Type:

FWS.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.128 ± 0.355 (0.688) C:NA T:88%	pCi/L	09/19/16 13:21	13982-63-3	
Radium-228	EPA 904.0	4.56 ± 1.14 (1.06) C:68% T:72%	pCi/L	09/14/16 22:13	15262-20-1	





ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Sample: BAA3-082616 Lab ID: 60226548004 Collected: 08/26/16 10:58 Received: 08/27/16 06:15 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac CAS No. **Parameters** Units Analyzed Qual EPA 903.1 0.914 ± 0.669 (0.921) Radium-226 pCi/L 09/19/16 13:33 13982-63-3 C:NA T:82% 2.09 ± 0.744 (1.09) EPA 904.0 Radium-228 pCi/L 09/14/16 22:14 15262-20-1 C:72% T:66%



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Sample: BAA4-082616 Lab ID: 60226548005 Collected: 08/26/16 12:07 Received: 08/27/16 06:15 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.167 ± 0.382 (0.227) C:NA T:71%	pCi/L	09/19/16 13:21	13982-63-3	
Radium-228	EPA 904.0	0.118 ± 0.422 (0.953) C:74% T:70%	pCi/L	09/14/16 22:14	15262-20-1	



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Sample: BAA2-082516 Lab ID: 60226548006 Collected: 08/25/16 15:52 Received: 08/27/16 06:15 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.717 ± 0.611 (0.858) C:NA T:76%	pCi/L	09/19/16 13:01	13982-63-3	
Radium-228	EPA 904.0	1.09 ± 0.614 (1.13) C:73% T:66%	pCi/L	09/14/16 22:37	15262-20-1	

Lenexa, KS 66219 (913)599-5665



Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Sample: DUP-082516 Lab ID: 60226548007 Collected: 08/25/16 08:00 Received: 08/27/16 06:15 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac CAS No. **Parameters** Units Analyzed Qual EPA 903.1 $0.602 \pm 0.423 \quad (0.204)$ Radium-226 pCi/L 09/19/16 13:32 13982-63-3 C:NA T:74% 1.81 ± 0.821 (1.41) EPA 904.0 Radium-228 pCi/L 09/14/16 22:14 15262-20-1 C:69% T:59%

ANALYTICAL RESULTS - RADIOCHEMISTRY



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 232375 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1138913 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 1.00 ± 0.449 (0.751) C:79% T:86%
 pCi/L
 09/14/16 22:12

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

QC Batch: 232372 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

METHOD BLANK: 1138901 Matrix: Water

Associated Lab Samples: 60226548001, 60226548002, 60226548003, 60226548004, 60226548005, 60226548006, 60226548007

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.000 ± 0.282 (0.456) C:NA T:99% pCi/L 09/19/16 13:09

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 232375

[1] The MB for Ra-228 batch 31271 has an activity equal to the required RL of 1.0 pCi/L. Data is all reportable w/narration.

ANALYTE QUALIFIERS

Date: 09/20/2016 09:14 AM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

_ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60226548001	FGD3-082516	EPA 200.7	444593	EPA 200.7	444654
0226548002	FGD4-082516	EPA 200.7	444593	EPA 200.7	444654
0226548003	BAA6-082516	EPA 200.7	444593	EPA 200.7	444654
0226548004	BAA3-082616	EPA 200.7	444593	EPA 200.7	444654
0226548005	BAA4-082616	EPA 200.7	444593	EPA 200.7	444654
0226548006	BAA2-082516	EPA 200.7	444593	EPA 200.7	444654
0226548007	DUP-082516	EPA 200.7	444593	EPA 200.7	444654
0226548001	FGD3-082516	EPA 200.8	444594	EPA 200.8	444657
0226548002	FGD4-082516	EPA 200.8	444594	EPA 200.8	444657
0226548003	BAA6-082516	EPA 200.8	444594	EPA 200.8	444657
0226548004	BAA3-082616	EPA 200.8	444594	EPA 200.8	444657
0226548005	BAA4-082616	EPA 200.8	444594	EPA 200.8	444657
0226548006	BAA2-082516	EPA 200.8	444594	EPA 200.8	444657
0226548007	DUP-082516	EPA 200.8	444594	EPA 200.8	444657
0226548001	FGD3-082516	EPA 245.1	444573	EPA 245.1	444600
0226548002	FGD4-082516	EPA 245.1	444573	EPA 245.1	444600
0226548003	BAA6-082516	EPA 245.1	444573	EPA 245.1	444600
0226548004	BAA3-082616	EPA 245.1	444573	EPA 245.1	444600
0226548005	BAA4-082616	EPA 245.1	444573	EPA 245.1	444600
0226548006	BAA2-082516	EPA 245.1	444573	EPA 245.1	444600
0226548007	DUP-082516	EPA 245.1	444573	EPA 245.1	444600
0226548001	FGD3-082516	EPA 903.1	232372		
0226548002	FGD4-082516	EPA 903.1	232372		
0226548003	BAA6-082516	EPA 903.1	232372		
0226548004	BAA3-082616	EPA 903.1	232372		
0226548005	BAA4-082616	EPA 903.1	232372		
0226548006	BAA2-082516	EPA 903.1	232372		
0226548007	DUP-082516	EPA 903.1	232372		
0226548001	FGD3-082516	EPA 904.0	232375		
0226548002	FGD4-082516	EPA 904.0	232375		
0226548003	BAA6-082516	EPA 904.0	232375		
0226548004	BAA3-082616	EPA 904.0	232375		
0226548005	BAA4-082616	EPA 904.0	232375		
0226548006	BAA2-082516	EPA 904.0	232375		
0226548007	DUP-082516	EPA 904.0	232375		
0226548001	FGD3-082516	SM 2540C	444839		
0226548002	FGD4-082516	SM 2540C	444839		
0226548003	BAA6-082516	SM 2540C	444839		
0226548004	BAA3-082616	SM 2540C	444839		
0226548005	BAA4-082616	SM 2540C	444839		
0226548006	BAA2-082516	SM 2540C	444839		
0226548007	DUP-082516	SM 2540C	444839		
0226548001	FGD3-082516	SM 4500-H+B	444465		
0226548002	FGD4-082516	SM 4500-H+B	444465		
0226548003	BAA6-082516	SM 4500-H+B	444465		
0226548004	BAA3-082616	SM 4500-H+B	444465		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Date: 09/20/2016 09:14 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60226548005	BAA4-082616	SM 4500-H+B	444645		
60226548006 60226548007	BAA2-082516 DUP-082516	SM 4500-H+B SM 4500-H+B	444465 444465		
60226548001	FGD3-082516	EPA 300.0	445543		
60226548001	FGD3-082516	EPA 300.0	445718		
60226548002	FGD4-082516	EPA 300.0	445543		
60226548002	FGD4-082516	EPA 300.0	445718		
60226548003	BAA6-082516	EPA 300.0	445543		
60226548003	BAA6-082516	EPA 300.0	445718		
60226548004	BAA3-082616	EPA 300.0	445543		
60226548004	BAA3-082616	EPA 300.0	445718		
60226548005	BAA4-082616	EPA 300.0	445543		
60226548005	BAA4-082616	EPA 300.0	445718		
60226548006	BAA2-082516	EPA 300.0	445543		
60226548006	BAA2-082516	EPA 300.0	445718		
60226548007	DUP-082516	EPA 300.0	445543		
60226548007	DUP-082516	EPA 300.0	445893		



Sample Condition Upon Receipt



F-KS-C-003-Rev.9, 30June2015

Page 44 of 47

Client Name: wester surgy			Optional
Courier: FedEx UPS VIA Z Clay	PEX □ ECI □	Pace ☐ Other ☐	Client □ Proj Due Date:
Tracking #:	Pace Shipping Label U	Jsed? Yes □ No	🖒 Proj Name:
Custody Seal on Cooler/Box Present: Yes	No □ Seals intact: Y	′es ✓ No □	
Packing Material: Bubble Wrap ☐ Bubble B	Bags □ Foam [□ Nope □	Other □
Thermometer Used: (CF+0.1 T-266) T-239	• •		s received on ice, cooling process has beg
Cooler Temperature: 1-7/1.8	(circle		ate and initials of person examining
Temperature should be above freezing to 6°C			ontents: pv8/27/16
Chain of Custody present:	Yes No N/A	1,	
Chain of Custody filled out:	Yes □No □N/A	2.	
Chain of Custody relinquished:	Yes □No □N/A	3.	
Sampler name & signature on COC:	✓Yes □No □N/A	4.	
Samples arrived within holding time:	√1Yes □No □N/A	5.	
Short Hold Time analyses (<72hr):	✓Yes □No □N/A	6. PH	
Rush Turn Around Time requested:	Yes No □N/A	7.	
Sufficient volume:	Yes □No □N/A	8.	
Correct containers used:	Tyes □No □N/A		
Pace containers used:	Yes □No □N/A	9.	
Containers intact:	Yes No N/A	10.	
Unpreserved 5035A soils frozen w/in 48hrs?	□Yes □No □N/A	11.::	
Filtered volume received for dissolved tests?	□Yes □No ☑N/A	12.	
Sample labels match COC:	Yes No N/A		
Includes date/time/ID/analyses Matrix:	NT	13.	
All containers needing preservation have been checked.	✓Yes □No □N/A		
All containers needing preservation are found to be in compliar with EPA recommendation.	Yes No NA	14.	
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	□Yes ZNo	Initial when completed	Lot # of added preservative
Trip Blank present:	□Yes □No □N/A		
Pace Trip Blank lot # (if purchased):		15.	
Headspace in VOA vials (>6mm):	□Yes □No □N/A		
		16.	
Project sampled in USDA Regulated Area:	□Yes □No ☑N/A	17. List State:	
Additional labels attached to 5035A vials in the field?	□Yes □No ☑N/A	18.	
Client Notification/ Resolution: Copy	COC to Client? Y / N	N Field Data R	equired? Y / N
Person Contacted:	Date/Time:		
Comments/ Resolution:			
Project Manager Review:		Date:	

By hwilson at 9:08 am, 8/29/16



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Proje	ect Inforr	mation:				Section C Invoice Information:							Pa			Page: of											
Company: WESTAR ENERGY	Report To: Bra	andon	Griffin				, 1	Attenti	on:	Jar	ed M	orriso	on															
Address: 818 Kansas Ave	Copy To: Ja	red Mc	orrison, He	eath Hor	nya			Company Name: WESTAR ENERGY REGULATORY AGEN							ENC	Y		F L	TV V	19.	FILE.							
Topeka, KS 66612		7						Address: SEE SECTION A F NPDES GRO								ROU	UND WATER DRINKING WATER				ER							
Email To: brandon.l.griffin@westarenergy.com	Purchase Orde	r No.						Pace Q										1	US.	Т	┌ F	RCRA				OTHER	_	
Phone: (785) 575-8135 Fax:	Project Name: JEC CCR Groundwater					Reference: Pace Project Heather Wilson, 913-563-1407 Si						Sit	te Lo	cation														
Requested Due Date/TAT: 7 DAY	Project Numbe	r.			-			Manage Pace P	rofile #:	965	57, 1	_	_						s	TATE:	_	KS	· 	_ 🛭				
		-				-		-	_	_	_	_	_		Re	eque	sted	Ana	lysis	Filter	red (Y	/N)		VIII				
Section D Valid Matrix C Required Client Information MATRIX	codes CODE	JMP)		COLL	ECTED					Pre	serva	atives		N/A									-					
DRINKING WATER WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR OTHER TISSUE	CODE DW WT WW P SL OOL WP AR OT TS	G=GF	COMPOSTAR		COMPOS END/GR	SITE SAB	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	HNO ₃	HCI	Nach Na ₂ S ₂ O ₃	Methanol Other	Analysis Test	200.7 Total Metals*	Total	300.0 Cl. Fl. SO4	4500 H+B	2540C TDS	Radium 226 Radium 228				Residual Chlorine (Y/N)	Pace	226	No./ L	ab I.D.
FGD 3-082516		76	57.12	-	8/25/1			4	T	3				1								13	pri	4	BBN2	W 2B	OIN 2	o as
FG04-082516		T 6		1 7 3	8/25/4	1148		4	1	3		-										1			1			as
3 BAA6 - 082516		76		75	8/25/16	1343		4		3									0		- LS			Ш			*	az
4 BAA 3-082616	V	TG			8/26/10	1058		4		3												1						my
5 BAA 4-082616	~	TG			6/26/16		7	4		3		2							- 5	1		1	1	\perp		1875		ar
6 BAA 2-082516	~	TG			8/25/4	1552		4		3												1		\perp	_+_		<u> </u>	06
7												8						\perp				-		\perp				
8						J VE	-	+			×												-	\perp		100	_	
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10	6 1			1 2	H									1			-	+			\vdash		-	+		- 17	-	
11						P			1				ш	1				1			\vdash	-		+		- 1		W7
12 Dy P-082516	h	TG	1.5		8/25/16	0800	1	4	10	3			Ш	17				_				1	4		+	PLE COND		WT
ADDITIONAL COMMENTS	F	ELINQL	JISHED BY	/ AFFILIA	ПОИ	DAT	E		TIME		.,	AC	CEPTI	ED BY	/ AFF	ILIAT	NOL	X.	-	DATE	-	IME	1	-	SAMP	LE COND	TIONS	1
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	13	2	70/0	nest	e/	08/25	5/16	13	300	2	W	w	M	75	=	-	- 0		8	27/1	40	615	1/	.7	1	7	/	
**200.8 Total Metals Co, As, Se, Mo, Cd, Sb, Tl				-						1	7	-							170				1	8	7	7	>	<u> </u>
					101			. 7		01.10	18				1		•		100							- 8		
Ū	_									\top		7										1	7			long:	-	
Page 4				SAMPI	ER NAME	AND SIGN	UTAN	RE .							761							1)//		ပ္	Lo (t	aaled /N)		Samples Intact (Y/N)
45 of		PRINT Name of SAMPLER:					R	ran	der	. (50	Th	^					1					Temp in °C	Received on Ice (Y/N)	dy Se ler (Y	3	(V/V)	
of 47	2)			-			of SAMPLER: DATE Signed (MM/DD/YY): 08			1/2	6/	16			Ten	Rec	Custody Sealed Cooler (Y/N)		Saml									

Chain of Custody

Workorder: 60226548

WO#:30194564

Owner Received Date: 8/27/2016 Results Requested By: 9/21/2016



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LAB USE ONLY 001

Report To Subcontract To Requested Analysis Heather Wilson Pace Analytical Pittsburgh Pace Analytical Kansas 1638 Roseytown Road 9608 Loiret Blvd. Suites 2,3, & 4 Lenexa, KS 66219 Greensburg, PA 15601 Phone (913)599-5665 Phone (724)850-5600 Radium **Preserved Containers** 226 Collect BP1N Qο Sample Date/Tim 228

2

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2

2

2

2

aller en la company		A CONTRACTOR OF THE CONTRACTOR	and).					Comments		
Transfers	Released By	Date/Time	Received	1	Date/Time					
1	Mas Va Ila	3/29/10 1700	Ben Malli	AM/	8-30-16 8:	50				
2	I JULI VON 18	1 1								
3						1	_		\sim	
Cooler Te	emperature on Receipt AMC	Custody	Seal Yor N	Rece	ived on Ice	Y or	(N)	Samples Inta	act Y or	N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Matrix

Water

Water

Water

Water

Water

Water

Water

Workorder Name: JEC CCR GROUNDWATER

Lab ID

60226548001

60226548002

60226548003

60226548004

60226548005

60226548006

60226548007

8/25/2016 09:46

8/25/2016 11:41

8/25/2016 13:43

8/26/2016 10:58

8/26/2016 12:07

8/25/2016 15:52

8/25/2016 08:00

Type

PS

PS

PS

PS

PS

PS

PS

ltem

2

Sample ID

FGD3-082516

FGD4-082516

BAA6-082516

BAA3-082616

BAA4-082616

BAA2-082516

DUP-082516

Sample Condition Upon Recei	pt Pi	ittsbı	urgh	30194564
Face Analytical Client Name:	Pa	Cl	K	·
Courier: Fed Ex UPS USPS Client				
Custody Seal on Cooler/Box Present: yes		no	Seals	intact: yes no
Thermometer Used	Туре	of Ice:	Wet	Blue (None)
Cooler Temperature Observed Temp	A	° C	Corre	ection Factor: °C Final Temp: °C
Temp should be above freezing to 6°C				
				Date and Initials of person examining contents:
Comments:	Yes	Νo	N/A	
Chain of Custody Present:	//			1.
Chain of Custody Filled Out:				2.
Chain of Custody Relinquished:				3.
Sampler Name & Signature on COC:		1		4.
Sample Labels match COC:				5.
-Includes date/time/ID/Analysis Matrix:	In	7		
Samples Arrived within Hold Time:				6.
Short Hold Time Analysis (<72hr remaining):		1	1	7.
Rush Turn Around Time Requested:		1		8.
		-		9.
Sufficient Volume:				10.
Correct Containers Used:	/			10.
-Pace Containers Used:	-	<u> </u>		11.
Containers Intact:	┼			12.
Filtered volume received for Dissolved tests All containers needing preservation have been checked.		 	/	
		-		13. Ph/
All containers needing preservation are found to be in compliance with EPA recommendation.				11102
·	L		L	Initial when Dim Date/time of
exceptions: VOA, coliform, TOC, O&G, Phenolics				completed ISU / preservation
				preservative
Headspace in VOA Vials (>6mm):				14.
Trip Blank Present:				15.
Trip Blank Custody Seals Present			1	
Rad Aqueous Samples Screened > 0.5 mrem/hr		/		Initial when completed: BM Date: 8-30-16
Client Notification/ Resolution:				
Person Contacted:			Date/	Time: Contacted By:
Comments/ Resolution:				
- '				

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 1-2
September 2016 Sampling Event
Laboratory Analytical Report



October 18, 2016

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on September 23, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Emily Webb for Heather Wilson heather.wilson@pacelabs.com Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY Adam Kneeling, Haley & Aldrich, Inc. JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051 New Mexico Certification #: PA01457

New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282 South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5 USDA Soil Permit #: P330-14-00213 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification Virginia/VELAP Certification #: 460198 Washington Certification #: C868

West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60228378001	BAA6-092216	Water	09/22/16 08:26	09/23/16 06:55
60228378002	BAA4-092216	Water	09/22/16 09:55	09/23/16 06:55
60228378003	BAA3-092216	Water	09/22/16 11:03	09/23/16 06:55
60228378004	BAA2-092216	Water	09/22/16 12:25	09/23/16 06:55
60228378005	FGD1-092216	Water	09/22/16 13:30	09/23/16 06:55
60228378006	DUP-092216	Water	09/22/16 18:00	09/23/16 06:55



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60228378001	BAA6-092216	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228378002	BAA4-092216	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0228378003	BAA3-092216	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228378004	BAA2-092216	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228378005	FGD1-092216	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
	_	SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228378006	DUP-092216	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 448189

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228378001,60228510003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1833593)
 - Calcium
- MSD (Lab ID: 1833594)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method:EPA 245.1Description:245.1 MercuryClient:WESTAR ENERGYDate:October 18, 2016

General Information:

6 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 447972

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228265001,60228265002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1832814)
 - Mercury



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** October 18, 2016

General Information:

6 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** October 18, 2016

General Information:

6 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- BAA2-092216 (Lab ID: 60228378004)
- BAA3-092216 (Lab ID: 60228378003)
- BAA4-092216 (Lab ID: 60228378002)
- BAA6-092216 (Lab ID: 60228378001)
- DUP-092216 (Lab ID: 60228378006)
- FGD1-092216 (Lab ID: 60228378005)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 450603

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228378001,60228378002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1843930)
 - Fluoride
- MSD (Lab ID: 1843931)
 - Fluoride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Sample: BAA6-092216	Lab ID: 602	228378001	Collected: 09/22/1	6 08:26	Received: 09)/23/16 06:55 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.022	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:00	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:00	7440-41-7	
Boron, Total Recoverable	4.0	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:00	7440-42-8	
Calcium, Total Recoverable	478	mg/L	0.10	1		09/30/16 16:00		M1
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:00		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:00		
Lithium	0.10	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:00	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:54	7440-36-0	
Arsenic, Total Recoverable	0.0013	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:54	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 21:54	7440-43-9	
Cobalt, Total Recoverable	0.0012	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:54	7440-48-4	
Molybdenum, Total Recoverable	0.0065	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:54	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:54	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:54	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3330	mg/L	5.0	1		09/26/16 16:03		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		10/01/16 10:30		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	233	mg/L	20.0	20		10/15/16 13:39	16887-00-6	
Fluoride	0.51	mg/L	0.20	1		10/14/16 18:38	16984-48-8	M1
Sulfate	1840	mg/L	200	200		10/15/16 14:22	1/808-70-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Sample: BAA4-092216	Lab ID: 602	28378002	Collected: 09/22/1	6 09:55	Received: 09	/23/16 06:55 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.032	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:07	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:07	7440-41-7	
Boron, Total Recoverable	0.91	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:07	7440-42-8	
Calcium, Total Recoverable	404	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:07	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:07	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:07	7439-92-1	
Lithium	0.018	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:07	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:58	7440-36-0	
Arsenic, Total Recoverable	0.0080	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:58	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 21:58	7440-43-9	
Cobalt, Total Recoverable	0.033	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:58	7440-48-4	
Molybdenum, Total Recoverable	0.12	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:58	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:58	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 21:58	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC .					
Total Dissolved Solids	4090	mg/L	5.0	1		09/26/16 16:04		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		10/01/16 10:30		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	.0					
Chloride	177	mg/L	20.0	20		10/15/16 15:33	16887-00-6	
Fluoride	0.34	mg/L	0.20	1		10/14/16 19:20	16984-48-8	
Sulfate	2220	mg/L	200	200		10/15/16 15:47	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Sample: BAA3-092216	Lab ID: 602	228378003	Collected: 09/22/1	6 11:03	Received: 09	/23/16 06:55 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.025	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:14	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:14	7440-41-7	
Boron, Total Recoverable	2.3	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:14	7440-42-8	
Calcium, Total Recoverable	496	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:14	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:14	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20			
ithium	0.10	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:14	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:11	7440-36-0	
Arsenic, Total Recoverable	0.0014	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:11	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:11	7440-43-9	
Cobalt, Total Recoverable	0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:11	7440-48-4	
Molybdenum, Total Recoverable	0.0031	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:11	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:11	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:11	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3110	mg/L	5.0	1		09/26/16 16:04	ŀ	
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	O-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		10/01/16 10:30)	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	154	mg/L	20.0	20		10/15/16 16:01	16887-00-6	
Fluoride	1.0	mg/L	0.20	1		10/14/16 19:49	16984-48-8	
Sulfate	2020	mg/L	200	200		10/15/16 16:15	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Sample: BAA2-092216	Lab ID: 602	228378004	Collected: 09/22/1	6 12:25	Received: 09	/23/16 06:55 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.053	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:17	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:17	7440-41-7	
Boron, Total Recoverable	1.0	mg/L	0.10	1	09/27/16 15:20			
Calcium, Total Recoverable	181	mg/L	0.10	1	09/27/16 15:20			
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20			
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20			
_ithium	0.020	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:17	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:16	7440-36-0	
Arsenic, Total Recoverable	0.0055	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:16	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:16	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:16	7440-48-4	
Molybdenum, Total Recoverable	0.041	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:16	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20			
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:16	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	1340	mg/L	5.0	1		09/26/16 16:05		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.5	Std. Units	0.10	1		10/01/16 10:30		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	.0					
Chloride	133	mg/L	10.0	10		10/15/16 16:29	16887-00-6	
Fluoride	0.52	mg/L	0.20	1		10/14/16 20:03	16984-48-8	
Sulfate	658	mg/L	100	100		10/15/16 16:43	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Sample: FGD1-092216	Lab ID: 602	228378005	Collected: 09/22/1	6 13:30	Received: 09)/23/16 06:55 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.28	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:19	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:19	7440-41-7	
Boron, Total Recoverable	0.11	mg/L	0.10	1		09/30/16 16:19		
Calcium, Total Recoverable	90.4	mg/L	0.10	1		09/30/16 16:19		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:19		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:19		
Lithium	0.014	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:19	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:20	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:20	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:20	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:20	7440-48-4	
Molybdenum, Total Recoverable	0.0013	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:20	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		10/12/16 22:20		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:20	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	507	mg/L	5.0	1		09/26/16 16:05		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
oH at 25 Degrees C	7.6	Std. Units	0.10	1		10/01/16 10:30		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	46.5	mg/L	5.0	5		10/15/16 16:58	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		10/14/16 20:17	16984-48-8	
Sulfate	93.9	mg/L	5.0	5		10/15/16 16:58	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Sample: DUP-092216	Lab ID: 602	228378006	Collected: 09/22/1	6 18:00	Received: 09)/23/16 06:55 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.025	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:21	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:21	7440-41-7	
Boron, Total Recoverable	2.8	mg/L	0.10	1		09/30/16 16:21		
Calcium, Total Recoverable	395	mg/L	0.10	1		09/30/16 16:21		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:21	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:21		
_ithium	0.082	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:21	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:33	7440-36-0	
Arsenic, Total Recoverable	0.0021	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:33	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:33	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:33	7440-48-4	
Molybdenum, Total Recoverable	0.0099	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:33	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:33	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:33	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC .					
Total Dissolved Solids	2560	mg/L	5.0	1		09/26/16 16:06		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		10/01/16 10:30		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	229	mg/L	20.0	20		10/15/16 17:54	16887-00-6	
Fluoride	0.56	mg/L	0.20	1		10/14/16 21:00	16984-48-8	
Sulfate	1300	mg/L	100	100		10/15/16 18:08	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

QC Batch: 447972 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1832810 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

Blank Reporting

 Parameter
 Units
 Result
 Limit
 Analyzed
 Qualifiers

 Mercury
 mg/L
 <0.00020</td>
 0.00020
 09/27/16 08:48

LABORATORY CONTROL SAMPLE: 1832811

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0056 112 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1832812 1832813

MS MSD 60228265001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0058 70-130 20 Mercury mg/L < 0.00020 .005 .005 0.0056 111 116

MATRIX SPIKE SAMPLE: 1832814 60228265002 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.00020 70-130 M1 Mercury mg/L .005 0.0033 67

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

QC Batch: 448189 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1833591 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/30/16 15:57	
Beryllium	mg/L	< 0.0010	0.0010	09/30/16 15:57	
Boron	mg/L	<0.10	0.10	09/30/16 15:57	
Calcium	mg/L	< 0.10	0.10	09/30/16 15:57	
Chromium	mg/L	< 0.0050	0.0050	09/30/16 15:57	
Lead	mg/L	< 0.0050	0.0050	09/30/16 15:57	
Lithium	mg/L	<0.010	0.010	09/30/16 15:57	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
ium	mg/L		1.0	102	85-115	
llium	mg/L	1	1.0	101	85-115	
n	mg/L	1	0.98	98	85-115	
ım	mg/L	10	9.6	96	85-115	
nium	mg/L	1	0.99	99	85-115	
	mg/L	1	1.0	103	85-115	
m	mg/L	1	1.0	103	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 18335	93		1833594							
Parameter	6 Units	0228378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.022	1	1	1.1	1.1	106	106	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	1.0	100	101	70-130	1	20	
Boron	mg/L	4.0	1	1	5.2	5.2	116	117	70-130	0	20	
Calcium	mg/L	478	10	10	509	506	312	279	70-130	1	20	M1
Chromium	mg/L	< 0.0050	1	1	0.98	1.0	98	100	70-130	1	20	
Lead	mg/L	< 0.0050	1	1	0.98	0.99	98	99	70-130	1	20	
Lithium	mg/L	0.10	1	1	1.2	1.2	114	115	70-130	0	20	

MATRIX SPIKE SAMPLE:	1833595						
		60228510003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.057	1	1.1	102	70-130	
Beryllium	mg/L	< 0.0010	1	1.0	100	70-130	
Boron	mg/L	0.29	1	1.3	101	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

MATRIX SPIKE SAMPLE:	1833595						
Parameter	Units	60228510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	160	10	170	92	70-130	
Chromium	mg/L	< 0.0050	1	0.98	98	70-130	
Lead	mg/L	< 0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.014	1	1.1	106	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

QC Batch: 448190 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1833596 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	10/12/16 21:41	
Arsenic	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Cadmium	mg/L	< 0.00050	0.00050	10/12/16 21:41	
Cobalt	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Molybdenum	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Selenium	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Thallium	mg/L	< 0.0010	0.0010	10/12/16 21:41	

LABORATORY CONTROL SAMPLE:	1833597					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.041	101	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.041	101	85-115	
Molybdenum	mg/L	.04	0.042	104	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 183359	98 MS	MSD	1833599							
	6	0228378002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	<0.0010	.04	.04	0.040	0.039	99	96	70-130	3	20	
Arsenic	mg/L	0.0080	.04	.04	0.049	0.049	102	102	70-130	0	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.035	0.034	88	86	70-130	2	20	
Cobalt	mg/L	0.033	.04	.04	0.068	0.068	89	88	70-130	1	20	
Molybdenum	mg/L	0.12	.04	.04	0.17	0.16	110	106	70-130	1	20	
Selenium	mg/L	< 0.0010	.04	.04	0.043	0.042	107	104	70-130	3	20	
Thallium	mg/L	< 0.0010	.04	.04	0.035	0.034	87	86	70-130	1	20	

MATRIX SPIKE SAMPLE:	1833600						
		60228510004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	98	70-130	
Arsenic	mg/L	0.0035	.04	0.045	104	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	89	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

MATRIX SPIKE SAMPLE:	1833600						
Parameter	Units	60228510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
							Qualificis
Cobalt	mg/L	< 0.0010	.04	0.038	94	70-130	
Molybdenum	mg/L	0.047	.04	0.090	108	70-130	
Selenium	mg/L	< 0.0010	.04	0.044	110	70-130	
Thallium	mg/L	< 0.0010	.04	0.035	87	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

QC Batch: 448056 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1833015 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 09/26/16 15:55

LABORATORY CONTROL SAMPLE: 1833016

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Total Dissolved Solids mg/L 1000 1040 104 80-120

SAMPLE DUPLICATE: 1833017

60228313001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 326 10 **Total Dissolved Solids** 330 1 mg/L

SAMPLE DUPLICATE: 1833018

Date: 10/18/2016 02:10 PM

60228342001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 467 **Total Dissolved Solids** mg/L 480 3 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

QC Batch: 448778 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

SAMPLE DUPLICATE: 1836590

Date: 10/18/2016 02:10 PM

60228455001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.0 pH at 25 Degrees C 7.0 5 H6 Std. Units 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

QC Batch: 450603 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1843928 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers
Fluoride mg/L <0.20 0.20 10/14/16 18:09

LABORATORY CONTROL SAMPLE: 1843929

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.4 97 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843930 1843931

MS MSD 60228378001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Fluoride 80-120 15 M1 mg/L 0.51 2.5 2.5 3.6 3.7 124 125

 MATRIX SPIKE SAMPLE:
 1843932
 60228378002
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

Fluoride mg/L 0.34 2.5 3.1 112 80-120

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Chloride

Date: 10/18/2016 02:10 PM

Sulfate

QC Batch: 450676 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1844258 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

Blank Reporting Limit Qualifiers Parameter Units Result Analyzed <1.0 10/15/16 12:57 mg/L 1.0 mg/L <1.0 1.0 10/15/16 12:57

LABORATORY CONTROL SAMPLE: 1844259

Spike LCS LCS % Rec
Parameter Units Conc. Result % Rec Limits Qualifiers

 Chloride
 mg/L
 5
 4.7
 94
 90-110

 Sulfate
 mg/L
 5
 5.1
 103
 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1844261 1844260 MS MSD 60228378001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 233 100 100 351 345 118 112 80-120 2 15 Sulfate mg/L 1840 1000 1000 2960 2920 112 108 80-120 15

MATRIX SPIKE SAMPLE: 1844262 MS MS 60229306001 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride 189 100 301 113 80-120 mg/L 820 1370 80-120 Sulfate mg/L 500 111

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Sample: BAA6-092216 Lab ID: 60228378001 Collected: 09/22/16 08:26 Received: 09/23/16 06:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.734 ± 0.424 (0.166) C:NA T:87%	pCi/L	10/12/16 22:47	13982-63-3	
Radium-228	EPA 904.0	2.35 ± 0.758 (0.949) C:65% T:83%	pCi/L	10/12/16 11:51	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Sample: BAA4-092216 Lab ID: 60228378002 Collected: 09/22/16 09:55 Received: 09/23/16 06:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.157 ± 0.341 (0.629) C:NA T:97%	pCi/L	10/12/16 23:10	13982-63-3	
Radium-228	EPA 904.0	1.06 ± 0.555 (0.988) C:57% T:87%	pCi/L	10/12/16 11:49	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Sample: BAA3-092216 Lab ID: 60228378003 Collected: 09/22/16 11:03 Received: 09/23/16 06:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.300 ± 0.313 (0.442) C:NA T:87%	pCi/L	10/12/16 23:18	13982-63-3	
Radium-228	EPA 904.0	2.04 ± 0.676 (0.932) C:61% T:88%	pCi/L	10/12/16 11:49	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Sample: BAA2-092216 Lab ID: 60228378004 Collected: 09/22/16 12:25 Received: 09/23/16 06:55 Matrix: Water

PWS: Site ID: Sample Type:

1 773.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.935 ± 0.544 (0.579) C:NA T:85%	pCi/L	10/12/16 23:18	13982-63-3	
Radium-228	EPA 904.0	0.481 ± 0.439 (0.895) C:64% T:85%	pCi/L	10/12/16 11:49	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Sample: FGD1-092216 Lab ID: 60228378005 Collected: 09/22/16 13:30 Received: 09/23/16 06:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.614 ± 0.522 (0.734) C:NA T:78%	pCi/L	10/12/16 23:19	13982-63-3	
Radium-228	EPA 904.0	0.937 ± 0.546 (1.00) C:55% T:85%	pCi/L	10/12/16 11:49	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Sample: DUP-092216 Lab ID: 60228378006 Collected: 09/22/16 18:00 Received: 09/23/16 06:55 Matrix: Water

PWS: Site ID: Sample Type:

FWS.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.461 ± 0.361 (0.424) C:NA T:93%	pCi/L	10/12/16 23:19	13982-63-3	
Radium-228	EPA 904.0	2.02 ± 0.681 (0.973) C:62% T:89%	pCi/L	10/12/16 11:49	15262-20-1	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

QC Batch: 234974 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1153093 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-228 0.557 ± 0.410 (0.791) C:58% T:89% pCi/L 10/12/16 11:50

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

QC Batch: 234970 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

METHOD BLANK: 1153085 Matrix: Water

Associated Lab Samples: 60228378001, 60228378002, 60228378003, 60228378004, 60228378005, 60228378006

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.0625 ± 0.285 (0.580) C:NA T:89% pCi/L 10/12/16 21:46

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 10/18/2016 02:10 PM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60228378001	BAA6-092216	EPA 200.7	448189	EPA 200.7	
60228378002	BAA4-092216	EPA 200.7	448189	EPA 200.7	448246
0228378003	BAA3-092216	EPA 200.7	448189	EPA 200.7	448246
0228378004	BAA2-092216	EPA 200.7	448189	EPA 200.7	448246
0228378005	FGD1-092216	EPA 200.7	448189	EPA 200.7	448246
0228378006	DUP-092216	EPA 200.7	448189	EPA 200.7	448246
0228378001	BAA6-092216	EPA 200.8	448190	EPA 200.8	448248
0228378002	BAA4-092216	EPA 200.8	448190	EPA 200.8	448248
0228378003	BAA3-092216	EPA 200.8	448190	EPA 200.8	448248
0228378004	BAA2-092216	EPA 200.8	448190	EPA 200.8	448248
0228378005	FGD1-092216	EPA 200.8	448190	EPA 200.8	448248
0228378005 0228378006	DUP-092216	EPA 200.8	448190	EPA 200.8	448248
0228378001	BAA6-092216	EPA 245.1	447972	EPA 245.1	448022
0228378002	BAA4-092216	EPA 245.1	447972	EPA 245.1	448022
0228378003	BAA3-092216	EPA 245.1	447972	EPA 245.1	448022
0228378004	BAA2-092216	EPA 245.1	447972	EPA 245.1	448022
0228378005 0228378006	FGD1-092216 DUP-092216	EPA 245.1 EPA 245.1	447972 447972	EPA 245.1 EPA 245.1	448022 448022
				LFA 245.1	440022
0228378001	BAA6-092216	EPA 903.1	234970		
0228378002	BAA4-092216	EPA 903.1	234970		
0228378003	BAA3-092216	EPA 903.1	234970		
0228378004	BAA2-092216	EPA 903.1	234970		
0228378005	FGD1-092216	EPA 903.1	234970		
0228378006	DUP-092216	EPA 903.1	234970		
0228378001	BAA6-092216	EPA 904.0	234974		
0228378002	BAA4-092216	EPA 904.0	234974		
0228378003	BAA3-092216	EPA 904.0	234974		
0228378004	BAA2-092216	EPA 904.0	234974		
0228378005	FGD1-092216	EPA 904.0	234974		
0228378006	DUP-092216	EPA 904.0	234974		
0228378001	BAA6-092216	SM 2540C	448056		
0228378002	BAA4-092216	SM 2540C	448056		
0228378003	BAA3-092216	SM 2540C	448056		
0228378004	BAA2-092216	SM 2540C	448056		
0228378005	FGD1-092216	SM 2540C	448056		
0228378006	DUP-092216	SM 2540C	448056		
0228378001	BAA6-092216	SM 4500-H+B	448778		
0228378002	BAA4-092216	SM 4500-H+B	448778		
0228378003	BAA3-092216	SM 4500-H+B	448778		
0228378004	BAA2-092216	SM 4500-H+B	448778		
0228378005	FGD1-092216	SM 4500-H+B	448778		
0228378006	DUP-092216	SM 4500-H+B	448778		
		EDA 000 0	450000		
0228378001	BAA6-092216	EPA 300.0	450603		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228378

Date: 10/18/2016 02:10 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228378002	BAA4-092216	EPA 300.0	450603		
60228378002	BAA4-092216	EPA 300.0	450676		
60228378003	BAA3-092216	EPA 300.0	450603		
60228378003	BAA3-092216	EPA 300.0	450676		
60228378004	BAA2-092216	EPA 300.0	450603		
60228378004	BAA2-092216	EPA 300.0	450676		
60228378005	FGD1-092216	EPA 300.0	450603		
60228378005	FGD1-092216	EPA 300.0	450676		
60228378006	DUP-092216	EPA 300.0	450603		
60228378006	DUP-092216	EPA 300.0	450676		



Sample Condition Upon Receipt



/			pro-
Client Name: wstar Energy			
Courier: FedEx UPS VIA Clay	PEX 🗆 ECI 🗆	Pace ☐ Xroads ☐ Clie	ent Other
Tracking #: Pa	ace Shipping Label Used	ng? Yes□ Nor⊡	
Custody Seal on Cooler/Box Present: Yes 🗖 No 🗆	Seals intact: Yes	No □	
Packing Material: Bubble Wrap ☐ Bubble Bags	s □ Foam □	None 🗆 Other 🛭]
Thermometer Used: 1-266 / T-239 Type	of Ice: Wet Blue Nor	ne	
Cooler Temperature (°C): As-read 2-3//-6 Corr. Fa	ctor CF-0.1 Correct		ite and initials of person amining contents:
Temperature should be above freezing to 6°C		2//-	pug/23/16
Chain of Custody present:	ØYes □No □N/A		
Chain of Custody relinquished:	ZıYes □No □N/A		
Samples arrived within holding time:	ZYes □No □N/A		
Short Hold Time analyses (<72hr):	Yes ONO ON/A	14	
		7//	
Rush Turn Around Time requested:	1		
Sufficient volume:	Yes No N/A		
Correct containers used:	Yes No N/A		
Pace containers used:	Yes No N/A		
Containers intact:	Yes □No □N/A		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	Yes □No ∠N/A		
Filtered volume received for dissolved tests?	□Yes □No ZN/A		
Sample labels match COC: Date / time / ID / analyses	✓Yes □No □N/A		
Samples contain multiple phases? Matrix: WT	□Yes \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
Containers requiring pH preservation in compliance?	Yes No N/A		
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)			
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)			
Cyanide water sample checks: N/A Lead acetate strip turns dark? (Record only)	□Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:	□Yes □No □N/A		
Headspace in VOA vials (>6mm):	□Yes □No ☑N/A		
Samples from USDA Regulated Area: State:	□Yes □No ☑N/A		
Additional labels attached to 5035A / TX1005 vials in the fie	Id? □Yes □No ØN/A		
Client Notification/ Resolution: Copy COC	to Client? Y / N	Field Data Required?	Y / N
Person Contacted: Date	e/Time:		
Comments/ Resolution:			
		w -	
Project Manager Review:	Date	: 9/23/11n	
The state of the s			



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section Required	A Client Information:	Section B Required P		forma	ation:					Secti		c ormatic	on:														Page:	l	of	1	
Company		Report To:	Brand	on G	Griffin					Attent	tion:	Ja	ared	Мог	ison									n/		.=					
Address:	- 818 Kansas Ave	nsas Ave Copy To: Jared Morrison, Heath Hornya								Company Name: WESTAR ENERGY										RE	REGULATORY AGENCY										
	Topeka, KS 66612									Address: SEE SECTION A										V	₩ NPDES ☐ GROUND WATER ☐ DRINKING WATER										
Email To:	brandon.l.griffin@westarenergy.com	renergy.com Purchase Order No.:								Pace Quote										F UST F RCRA F OTHER											
Phone:	(785) 575-8135 Fax:	Project Name: JEC CCR Groundwater								Reference: Pace Project Heather Wilson, 913-563-1407										Site Location											
	ed Due Date/TAT: 7 DAY	Project Num	nber:		_			-		Manag Pace I		#: 9	657,	1	-	7						5	STATE			KS	[
				-		-				-	-		-		-	-	EL.	Re	eque	sted	Ána		s Filte	29,	(Y/N)	VII				
	Section D Valid Matrix C	odes		T		-					I	T					→ N /A	T	Ť		T				Ħ	\Box	7///				
	Required Client Information MATRIX	CODE	codes to left)	C=COMP)		COLL	ECTED				L,	Pi	resei	vativ	es	_	5	4	4	1	1			_	\perp	4	_///				
ITEM#	SAMPLE ID (A-Z, 0-9 / , -) Sample IDs MUST BE UNIQUE Sample IDs MUST BE UNIQUE SPINION WATER WASTE WATER PRODUCT OIL WIPE AIR OTHER TISSUE	DW WT WW P SL OL WP AR TS	CODE (see valid	SAMPLE TYPE (G=GRAB C=C	COMPO		COMPO: END/GF	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	HCI	NaOH	Na ₂ S ₂ O ₃	Other	∦Analysis Test	7 Total	200.8 Total Metals**	245.1 Total Mercury		2540C TDS	Radium 226	Naululli 220		H	Residual Chlorine (Y/N)		て留了		Lab I.D.
	BA46-092216		WT	_	C47111	9/22 0826 4 1 3 IBRU 1B								1BP2N2-0 2BP/N W																	
2	BAA4-092216		A CONTRACTOR OF THE PARTY OF TH	5			9/22	6955		y	1		3			T	1					1				П		1			102
3	BAA 3-092216			5		17	9/22	1103		4	Ī		3																		103
4	BAA 2-092216			5		1	9/22	1225	1	4	1	3	3	П																	034
5	FGD 1-892216		WT	6		7 6	9/22	1330		4	I		3												1		, i	1		1	Cos
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7										- 1							8											-			=
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10						E	8						9 8				3														
11	N. III			*			12.					=						Y.					11								
12	DUP-892216		WT	G		1	7/22	1800		14	1		3				13					\perp		11	<i>blicu</i>			1882N2	2	BPIN	Wb
100	ADDITIONAL COMMENTS	2 3	RELIN	QUIS	SHED BY /	AFFILIAT	ION	DAT	E		TIME	17-1		1	ACCI	EPTE	D BY /	AFF	ILIAT	ION			DATE		TIME			SAM	PLE CON	DITIONS	3
*200.7 T	otal Metals: Ba, Be, B, Ca, Cr, Pb, Li	13	V	V	/w	esp		9/227	Va	14	120	0	(1)	h	with	12	151	-		1.6		91	23/1	61	165	5-	3.4	Y	7		Y
**200,8	Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	/	1			-//	7		-102				y	<i>y</i>	V			T				1	11		31		2-7	4	>	-	Y
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	Ф 4					SAMPL	ER NAME		_					,		1	_	-				ΔÜ					ပ်	uo pe	Seale (Y/N)		z Inta
!	<u></u>						PRINT Nar	ne of SAM	PLER	B	ra.	nde	7		2 r	1 4	50	D.	TES	iana					11	\dashv	Temp in °	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)
43							SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 09/22										/	6		F	<u> </u>	Su2		Sar							

Chain of Custody

WO#:30197257





Workorder: 60228378 Workorder Name: JEC CCR GROUNDWATER Owner Received Date: 9/23/2016 Results Requested By: 10/18/2016 Report To Subcontract To Requested Analysis Heather Wilson Pace Analytical Pittsburgh Pace Analytical Kansas 1638 Roseytown Road 9608 Loiret Blvd. Suites 2,3, & 4 Lenexa, KS 66219 Greensburg, PA 15601 Phone (913)599-5665 Phone (724)850-5600 Radium **Preserved Containers** 226 Collect BP1N çο Sample Date/Tim 228 Item Sample ID Type Lab ID Matrix LAB USE ONLY BAA6-092216 PS 2 9/22/2016 08:26 Χ 60228378001 Water BAA4-092216 PS 2 Χ 9/22/2016 09:55 60228378002 Water 3 BAA3-092216 PS 9/22/2016 11:03 60228378003 2 Χ Water BAA2-092216 PS 9/22/2016 12:25 60228378004 Water 2 Χ FGD1-092216 PS Χ 9/22/2016 13:30 60228378005 Water 2 DUP-092216 PS 9/22/2016 18:00 Χ 2 60228378006 Water Comments **Transfers** Released By Date/Time Received Date/Time 9/26/16 490

Ν

Custody Seal / Yor

Cooler Temperature on Receipt

N/A °C

Samples Intact/Y) or

(N)

Received on Ice Y or

N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Rece	∍ipt F	Pittst	ourg	gh .	
Pace Analytical Client Name:	F	O _i Ce	2	KS	Project # 30 1972 5
Courier: Fed Ex UPS USPS Clie Tracking #: 7044653 958	nt □ '{	Comm	ercia	Pace Other	
Custody Seal on Cooler/Box Present: X yes					no no
Thermometer Used	Type	of Ice:			
Cooler Temperature Observed Temp		-°C	Cor	rection Factor <u>:</u>	°C Final Temp:
Temp should be above freezing to 6°C					Date and Initials of person examining
	[X/==	1 61-	LALI		Date and Initials of person examining contents: 1 4-27-16
Comments:	Yes	No	N/A		
Chain of Custody Present:	$\downarrow \Diamond$			1.	
Chain of Custody Filled Out:	+		_	2.	
Chain of Custody Relinquished:				3.	
Sampler Name & Signature on COC:	<u> </u>	\times		4.	
Sample Labels match COC:		L		5.	
-Includes date/time/ID/Analysis Matrix:	\frac{\frac{1}{1}}	·			
Samples Arrived within Hold Time:	\times			6.	
Short Hold Time Analysis (<72hr remaining):		\geq		7.	
Rush Turn Around Time Requested:		X		8.	
Sufficient Volume:	X			9.	
Correct Containers Used:	$ \mathbf{x} $			10.	
-Pace Containers Used:	\searrow				
Containers Intact:	$\left[\times \right]$			11	
Filtered volume received for Dissolved tests		\times		12.	
All containers needing preservation have been checked.	\mathbf{X}			13.	
All containers needing preservation are found to be in compliance with EPA recommendation.				14462	
" NOA life-re TOC OSC Phonolico				Initial when completed	Date/time of preservation
exceptions: VOA, coliform, TOC, O&G, Phenolics				Lot # of added	jproso, valien
	····			preservative	
Headspace in VOA Vials (>6mm):			\triangle	14.	
Гrip Blank Present:	}	$\times \downarrow$	-/	15.	
rip Blank Custody Seals Present			<u>X</u>	Lillian Agi	
Rad Aqueous Samples Screened > 0.5 mrem/hr		\times		Initial when completed:	Date: 9-27-16
Client Notification/ Resolution:	processor and the second				
Person Contacted:			Date/	Гime:	Contacted By:
Comments/ Resolution:					

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



October 18, 2016

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on September 24, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Emily Webb for Heather Wilson heather.wilson@pacelabs.com Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification

Indiana Certification lowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0

Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051

New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706

North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282 South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5 USDA Soil Permit #: P330-14-00213 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification Virginia/VELAP Certification #: 460198 Washington Certification #: C868

West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60228510001	FGD2-092316	Water	09/23/16 07:50	09/24/16 09:20
60228510002	FGD3-092316	Water	09/23/16 08:56	09/24/16 09:20
60228510003	FGD4-092316	Water	09/23/16 10:16	09/24/16 09:20
60228510004	FAA 5-092316	Water	09/23/16 11:53	09/24/16 09:20
60228510005	FAA 4-092316	Water	09/23/16 13:01	09/24/16 09:20
60228510006	DUP-092316	Water	09/23/16 17:00	09/24/16 09:20



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60228510001	FGD2-092316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0228510002	FGD3-092316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0228510003	FGD4-092316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0228510004	FAA 5-092316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0228510005	FAA 4-092316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
	_	SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228510006	DUP-092316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 448189

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228378001,60228510003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1833593)
 - Calcium
- MSD (Lab ID: 1833594)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 447972

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228265001,60228265002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1832814)
 - Mercury



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** October 18, 2016

General Information:

6 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** October 18, 2016

General Information:

6 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- DUP-092316 (Lab ID: 60228510006)
- FAA 4-092316 (Lab ID: 60228510005)
- FAA 5-092316 (Lab ID: 60228510004)
- FGD2-092316 (Lab ID: 60228510001)
- FGD3-092316 (Lab ID: 60228510002)
- FGD4-092316 (Lab ID: 60228510003)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 18, 2016

General Information:

6 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Sample: FGD2-092316	Lab ID: 602	228510001	Collected: 09/23/1	6 07:50	Received: 09	/24/16 09:20 N	Natrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.072	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:24	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:24	7440-41-7	
Boron, Total Recoverable	0.26	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:24	7440-42-8	
Calcium, Total Recoverable	111	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:24	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:24	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20			
ithium	<0.010	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:24	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:37	7440-43-9	
Cobalt, Total Recoverable	0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-48-4	
Molybdenum, Total Recoverable	0.0044	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	573	mg/L	5.0	1		09/28/16 11:01		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	0-H+B					
oH at 25 Degrees C	7.8	Std. Units	0.10	1		10/11/16 10:50		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	31.9	mg/L	2.0	2		10/15/16 22:23	16887-00-6	
Fluoride	0.38	mg/L	0.20	1		10/14/16 15:47	16984-48-8	
Sulfate	177	mg/L	20.0	20		10/15/16 22:37	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Sample: FGD3-092316	Lab ID: 602	228510002	Collected: 09/23/1	6 08:56	Received: 09	/24/16 09:20 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.20	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:26	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:26	7440-41-7	
Boron, Total Recoverable	0.15	mg/L	0.10	1		09/30/16 16:26		
Calcium, Total Recoverable	146	mg/L	0.10	1		09/30/16 16:26		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:26		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:26		
Lithium	0.015	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:26	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:42	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-48-4	
Molybdenum, Total Recoverable	0.0064	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		10/12/16 22:42		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	820	mg/L	5.0	1		09/28/16 11:03		
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	49.9	mg/L	5.0	5		10/15/16 22:52	16887-00-6	
Fluoride	0.28	mg/L	0.20	1		10/14/16 16:30	16984-48-8	
Sulfate	281	mg/L	20.0	20		10/15/16 23:34	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Sample: FGD4-092316	Lab ID: 602	228510003	Collected: 09/23/1	6 10:16	Received: 09	/24/16 09:20 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.057	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:29	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:29	7440-41-7	
Boron, Total Recoverable	0.29	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:29	7440-42-8	
Calcium, Total Recoverable	160	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:29	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:29	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		09/30/16 16:29		
_ithium	0.014	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:29	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:46	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-48-4	
Molybdenum, Total Recoverable	0.0041	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	OC					
Total Dissolved Solids	927	mg/L	5.0	1		09/28/16 11:04		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	O-H+B					
pH at 25 Degrees C	7.3	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	74.5	mg/L	5.0	5		10/15/16 23:48	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		10/14/16 16:44	16984-48-8	
Sulfate	371	mg/L	50.0	50		10/16/16 00:02	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Sample: FAA 5-092316	Lab ID: 602	28510004	Collected: 09/23/1	6 11:53	Received: 09	/24/16 09:20 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	<0.010	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:33	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:33	7440-41-7	
Boron, Total Recoverable	1.7	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:33	7440-42-8	
Calcium, Total Recoverable	493	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:33	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:33	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:33	7439-92-1	
Lithium	0.16	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:33	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-36-0	
Arsenic, Total Recoverable	0.0035	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:51	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-48-4	
Molybdenum, Total Recoverable	0.047	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	3210	mg/L	5.0	1		09/28/16 11:04		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	7.0	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	91.8	mg/L	10.0	10		10/16/16 00:16	16887-00-6	
Fluoride	1.0	mg/L	0.20	1		10/14/16 16:58	16984-48-8	
Sulfate	2010	mg/L	200	200		10/16/16 00:31	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Sample: FAA 4-092316	Lab ID: 602	28510005	Collected: 09/23/1	6 13:01	Received: 09)/24/16 09:20 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.050	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:35	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:35	7440-41-7	
Boron, Total Recoverable	0.35	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:35	7440-42-8	
Calcium, Total Recoverable	210	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:35	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:35	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:35	7439-92-1	
_ithium	0.016	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:35	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-38-2	
Cadmium, Total Recoverable	< 0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:59	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-48-4	
Molybdenum, Total Recoverable	0.0026	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC					
Total Dissolved Solids	1190	mg/L	5.0	1		09/28/16 11:04		
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
pH at 25 Degrees C	7.3	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	89.4	mg/L	10.0	10		10/16/16 00:45	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		10/14/16 17:13	16984-48-8	
Sulfate	552	mg/L	50.0	50		10/16/16 00:59	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Sample: DUP-092316	Lab ID: 602	228510006	Collected: 09/23/1	6 17:00	Received: 09	/24/16 09:20 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.072	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:42	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:42	2 7440-41-7	
Boron, Total Recoverable	0.25	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:42	2 7440-42-8	
Calcium, Total Recoverable	112	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:42	2 7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:42	2 7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:42	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:42	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	3 7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	3 7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	09/27/16 15:20	10/12/16 23:03	3 7440-43-9	
Cobalt, Total Recoverable	0.0011	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	3 7440-48-4	
Molybdenum, Total Recoverable	0.0047	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	3 7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	560	mg/L	5.0	1		09/28/16 11:05	;	
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
pH at 25 Degrees C	7.4	Std. Units	0.10	1		10/11/16 10:50)	H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	31.9	mg/L	2.0	2		10/16/16 01:13	3 16887-00-6	
Fluoride	0.38	mg/L	0.20	1		10/14/16 17:27		
Sulfate	179	mg/L	20.0	20		10/16/16 01:27		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

QC Batch: 447972 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1832810 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 09/27/16 08:48

LABORATORY CONTROL SAMPLE: 1832811

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0056 112 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1832812 1832813

MS MSD 60228265001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0058 70-130 20 Mercury mg/L < 0.00020 .005 .005 0.0056 111 116

MATRIX SPIKE SAMPLE: 1832814 60228265002 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.00020 70-130 M1 Mercury mg/L .005 0.0033 67

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

QC Batch: 448189 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1833591 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

		Blank	Reporting		0 ""
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	< 0.0050	0.0050	09/30/16 15:57	
Beryllium	mg/L	< 0.0010	0.0010	09/30/16 15:57	
Boron	mg/L	<0.10	0.10	09/30/16 15:57	
Calcium	mg/L	<0.10	0.10	09/30/16 15:57	
Chromium	mg/L	< 0.0050	0.0050	09/30/16 15:57	
Lead	mg/L	< 0.0050	0.0050	09/30/16 15:57	
Lithium	mg/L	<0.010	0.010	09/30/16 15:57	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
arium	mg/L		1.0	102	85-115	
eryllium	mg/L	1	1.0	101	85-115	
oron	mg/L	1	0.98	98	85-115	
alcium	mg/L	10	9.6	96	85-115	
romium	mg/L	1	0.99	99	85-115	
ad	mg/L	1	1.0	103	85-115	
iium	mg/L	1	1.0	103	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 183359	93		1833594							
Parameter	6 Units	0228378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.022	1	1	1.1	1.1	106	106	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	1.0	100	101	70-130	1	20	
Boron	mg/L	4.0	1	1	5.2	5.2	116	117	70-130	0	20	
Calcium	mg/L	478	10	10	509	506	312	279	70-130	1	20	M1
Chromium	mg/L	< 0.0050	1	1	0.98	1.0	98	100	70-130	1	20	
Lead	mg/L	< 0.0050	1	1	0.98	0.99	98	99	70-130	1	20	
Lithium	mg/L	0.10	1	1	1.2	1.2	114	115	70-130	0	20	

MATRIX SPIKE SAMPLE:	1833595						
		60228510003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.057	1	1.1	102	70-130	
Beryllium	mg/L	< 0.0010	1	1.0	100	70-130	
Boron	mg/L	0.29	1	1.3	101	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

MATRIX SPIKE SAMPLE:	1833595						
Parameter	Units	60228510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	160	10	170	92	70-130	
Chromium	mg/L	< 0.0050	1	0.98	98	70-130	
Lead	mg/L	< 0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.014	1	1.1	106	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

QC Batch: 448190 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1833596 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	10/12/16 21:41	
Arsenic	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Cadmium	mg/L	< 0.00050	0.00050	10/12/16 21:41	
Cobalt	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Molybdenum	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Selenium	mg/L	< 0.0010	0.0010	10/12/16 21:41	
Thallium	mg/L	< 0.0010	0.0010	10/12/16 21:41	

LABORATORY CONTROL SAMPLE:	1833597					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.041	101	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.041	101	85-115	
Molybdenum	mg/L	.04	0.042	104	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 183359	98		1833599							
Parameter	6 Units	0228378002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	.04	.04	0.040	0.039	99	96	70-130	3	20	
Arsenic	mg/L	0.0080	.04	.04	0.049	0.049	102	102	70-130	0	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.035	0.034	88	86	70-130	2	20	
Cobalt	mg/L	0.033	.04	.04	0.068	0.068	89	88	70-130	1	20	
Molybdenum	mg/L	0.12	.04	.04	0.17	0.16	110	106	70-130	1	20	
Selenium	mg/L	< 0.0010	.04	.04	0.043	0.042	107	104	70-130	3	20	
Thallium	mg/L	< 0.0010	.04	.04	0.035	0.034	87	86	70-130	1	20	

MATRIX SPIKE SAMPLE:	1833600						
		60228510004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	98	70-130	
Arsenic	mg/L	0.0035	.04	0.045	104	70-130	
Cadmium	mg/L	< 0.00050	.04	0.036	89	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

MATRIX SPIKE SAMPLE:	1833600						
Parameter	Units	60228510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
							Qualificis
Cobalt	mg/L	< 0.0010	.04	0.038	94	70-130	
Molybdenum	mg/L	0.047	.04	0.090	108	70-130	
Selenium	mg/L	< 0.0010	.04	0.044	110	70-130	
Thallium	mg/L	< 0.0010	.04	0.035	87	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

QC Batch: 448309 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1833986 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Blank Reporting

ParameterUnitsResultLimitAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.009/28/16 11:00

LABORATORY CONTROL SAMPLE: 1833987

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 995 99 80-120

SAMPLE DUPLICATE: 1833988

60228510001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 573 **Total Dissolved Solids** 570 1 10 mg/L

SAMPLE DUPLICATE: 1833989

Date: 10/18/2016 02:09 PM

60228563004 Dup Max RPD RPD Parameter Units Result Result Qualifiers 3300 **Total Dissolved Solids** mg/L 3480 5 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

QC Batch: 449966 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

SAMPLE DUPLICATE: 1841236

Date: 10/18/2016 02:09 PM

60229217001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers pH at 25 Degrees C 8.0 5 H6 Std. Units 8.1 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

QC Batch: 450605 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1843933 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 10/14/16 15:19

LABORATORY CONTROL SAMPLE: 1843934

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.6 102 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843935 1843936

MS MSD 60228510001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 3.2 Fluoride mg/L 0.38 2.5 2.5 3.3 115 116 80-120 15

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Chloride

Date: 10/18/2016 02:09 PM

Sulfate

QC Batch: 450676 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1844258 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Blank Reporting Limit Parameter Units Result Analyzed Qualifiers <1.0 10/15/16 12:57 mg/L 1.0 mg/L <1.0 1.0 10/15/16 12:57

 LABORATORY CONTROL SAMPLE:
 1844259
 Spike
 LCS
 LCS
 % Rec

 Parameter
 Units
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

 Chloride
 mg/L
 5
 4.7
 94
 90-110

 Chloride
 mg/L
 5
 4.7
 94
 90-110

 Sulfate
 mg/L
 5
 5.1
 103
 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1844261 1844260 MS MSD 60228378001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 233 100 100 351 345 118 112 80-120 2 15 Sulfate mg/L 1840 1000 1000 2960 2920 112 108 80-120 15

MATRIX SPIKE SAMPLE: 1844262 MS MS 60229306001 % Rec Spike Parameter Units Result Conc. Result % Rec Limits Qualifiers Chloride 189 100 301 113 80-120 mg/L 820 1370 80-120 Sulfate mg/L 500 111

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Sample: FGD2-092316 Lab ID: 60228510001 Collected: 09/23/16 07:50 Received: 09/24/16 09:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.118 ± 0.327 (0.635) C:NA T:85%	pCi/L	10/12/16 22:20	13982-63-3	
Radium-228	EPA 904.0	0.250 ± 0.441 (0.963) C:68% T:81%	pCi/L	10/12/16 15:36	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Sample: FGD3-092316 Lab ID: 60228510002 Collected: 09/23/16 08:56 Received: 09/24/16 09:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.740 ± 0.665 (1.01) C:NA T:83%	pCi/L	10/12/16 22:46	13982-63-3	
Radium-228	EPA 904.0	-0.0553 ± 0.385 (0.911) C:64% T:81%	pCi/L	10/12/16 15:36	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Sample: FGD4-092316 Lab ID: 60228510003 Collected: 09/23/16 10:16 Received: 09/24/16 09:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.180 ± 0.392 (0.903) C:NA T:84%	pCi/L	10/12/16 22:46	13982-63-3	
Radium-228	EPA 904.0	0.731 ± 0.509 (0.981) C:59% T:80%	pCi/L	10/12/16 15:36	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Sample: FAA 5-092316 Lab ID: 60228510004 Collected: 09/23/16 11:53 Received: 09/24/16 09:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.900 ± 0.504 (0.523) C:NA T:89%	pCi/L	10/12/16 22:45	13982-63-3	
Radium-228	EPA 904.0	0.535 ± 0.425 (0.833) C:60% T:82%	pCi/L	10/12/16 15:56	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Sample: FAA 4-092316 Lab ID: 60228510005 Collected: 09/23/16 13:01 Received: 09/24/16 09:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0683 ± 0.354 (0.735) C:NA T:82%	pCi/L	10/12/16 23:01	13982-63-3	
Radium-228	EPA 904.0	0.384 ± 0.333 (0.658) C:65% T:84%	pCi/L	10/12/16 15:38	15262-20-1	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Sample: DUP-092316 Lab ID: 60228510006 Collected: 09/23/16 17:00 Received: 09/24/16 09:20 Matrix: Water

PWS: Site ID: Sample Type:

FWS.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0601 ± 0.274 (0.443) C:NA T:86%	pCi/L	10/12/16 22:47	13982-63-3	
Radium-228	EPA 904.0	-0.309 ± 0.414 (1.05) C:60% T:72%	pCi/L	10/12/16 15:56	15262-20-1	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

QC Batch: 234970 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1153085 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.0625 ± 0.285 (0.580) C:NA T:89% pCi/L 10/12/16 21:46

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

QC Batch: 234962 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1153048 Matrix: Water

Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-228 0.716 \pm 0.442 (0.813) C:58% T:86% pCi/L 10/12/16 15:36

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 10/18/2016 02:09 PM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
0228510001	FGD2-092316	EPA 200.7	448189	EPA 200.7	448246
0228510002	FGD3-092316	EPA 200.7	448189	EPA 200.7	448246
0228510003	FGD4-092316	EPA 200.7	448189	EPA 200.7	448246
0228510004	FAA 5-092316	EPA 200.7	448189	EPA 200.7	448246
0228510005	FAA 4-092316	EPA 200.7	448189	EPA 200.7	448246
0228510006	DUP-092316	EPA 200.7	448189	EPA 200.7	448246
0228510001	FGD2-092316	EPA 200.8	448190	EPA 200.8	448248
0228510002	FGD3-092316	EPA 200.8	448190	EPA 200.8	448248
0228510003	FGD4-092316	EPA 200.8	448190	EPA 200.8	448248
0228510004	FAA 5-092316	EPA 200.8	448190	EPA 200.8	448248
0228510005	FAA 4-092316	EPA 200.8	448190	EPA 200.8	448248
0228510006	DUP-092316	EPA 200.8	448190	EPA 200.8	448248
0228510001	FGD2-092316	EPA 245.1	447972	EPA 245.1	448022
0228510002	FGD3-092316	EPA 245.1	447972	EPA 245.1	448022
0228510003	FGD4-092316	EPA 245.1	447972	EPA 245.1	448022
0228510004	FAA 5-092316	EPA 245.1	447972	EPA 245.1	448022
0228510005	FAA 4-092316	EPA 245.1	447972	EPA 245.1	448022
0228510006	DUP-092316	EPA 245.1	447972	EPA 245.1	448022
0228510001	FGD2-092316	EPA 903.1	234970		
0228510002	FGD3-092316	EPA 903.1	234970		
0228510003	FGD4-092316	EPA 903.1	234970		
228510004	FAA 5-092316	EPA 903.1	234970		
0228510005	FAA 4-092316	EPA 903.1	234970		
0228510006	DUP-092316	EPA 903.1	234970		
0228510001	FGD2-092316	EPA 904.0	234962		
0228510002	FGD3-092316	EPA 904.0	234962		
0228510003	FGD4-092316	EPA 904.0	234962		
0228510004	FAA 5-092316	EPA 904.0	234962		
0228510005	FAA 4-092316	EPA 904.0	234962		
0228510006	DUP-092316	EPA 904.0	234962		
0228510001	FGD2-092316	SM 2540C	448309		
0228510002	FGD3-092316	SM 2540C	448309		
0228510003	FGD4-092316	SM 2540C	448309		
0228510004	FAA 5-092316	SM 2540C	448309		
0228510005	FAA 4-092316	SM 2540C	448309		
0228510006	DUP-092316	SM 2540C	448309		
0228510001	FGD2-092316	SM 4500-H+B	449966		
0228510002	FGD3-092316	SM 4500-H+B	449966		
0228510003	FGD4-092316	SM 4500-H+B	449966		
0228510004	FAA 5-092316	SM 4500-H+B	449966		
0228510005	FAA 4-092316	SM 4500-H+B	449966		
0228510006	DUP-092316	SM 4500-H+B	449966		
0228510001	FGD2-092316	EPA 300.0	450605		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60228510

Date: 10/18/2016 02:09 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228510002	FGD3-092316	EPA 300.0	450605		
60228510002	FGD3-092316	EPA 300.0	450676		
60228510003	FGD4-092316	EPA 300.0	450605		
60228510003	FGD4-092316	EPA 300.0	450676		
60228510004	FAA 5-092316	EPA 300.0	450605		
60228510004	FAA 5-092316	EPA 300.0	450676		
60228510005	FAA 4-092316	EPA 300.0	450605		
60228510005	FAA 4-092316	EPA 300.0	450676		
60228510006	DUP-092316	EPA 300.0	450605		
60228510006	DUP-092316	EPA 300.0	450676		



Sample Condition Upon Receipt



Client Name:			Ame
Client Name: WStar Energy Courier: FedEx UPS VIA Clay			
	PEX 🗆 ECI 🗆	Pace ☐ Xroads ☐ Client	□ Other □
Tracking #: P	ace Shipping Label Used		
Custody Seal on Cooler/Box Present: Yes No 🗆	Seals intact: Yes	Ño□	
Packing Material: Bubble Wrap ☐ Bubble Bags	s □ Foam □	None ☐ Other ☐	
Thermometer Used: (T-266 / T-239 Type	of Ice Wet Blue Nor	17.47	and labels of a second
Cooler Temperature (°C): As-read <u>0-3/1-1</u> Corr. Fa	ctol CF +1.1) CF -0.1 Correct	1 . 1 / 2 2	and initials of person ining contepts:
Temperature should be above freezing to 6°C			pra/24/16
Chain of Custody present:	DYes □No □N/A		6 156
Chain of Custody relinquished:	Yes □No □N/A		
Samples arrived within holding time:	ØYes □No □N/A		
Short Hold Time analyses (<72hr):	✓Yes □No □N/A	214	
Rush Turn Around Time requested:	□Yes 🗖No □N/A	, .	
Sufficient volume:	Yes □No □N/A		
Correct containers used:	√yes □No □N/A		
Pace containers used:	Yes ONO ON/A		
Containers intact:	Yes No N/A		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ØN/A		
Filtered volume received for dissolved tests?	□Yes □No IN/A		
Sample labels match COC: Date / time / ID / analyses	ZYes □No □N/A		
Samples contain multiple phases? Matrix:	Yes INO N/A		
Containers requiring pH preservation in compliance?	Yes 🗆 No 🗆 N/A		
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)			
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks: N/A			
Lead acetate strip turns dark? (Record only)	□Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:	Yes No ZN/A		
Headspace in VOA vials (>6mm):	□Yes □No ☑N/A		
Samples from USDA Regulated Area: State:	□Yes □No □N/A		
Additional labels attached to 5035A / TX1005 vials in the fie	Id? □Yes □No ØN/A		
	to Client? Y N	Field Data Required? Y	/ N
	e/Time:	·	
Comments/ Resolution:	<u> </u>		
Almai		al-ulu	
Project Manager Review:	Date	: 4/26/16	



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Section B Required Pro	ject Inform	nation:					Section Invoice	on C e Inforr	nation	:												Pa	age:	l	of		6:
Company: WESTAR ENERGY	Report To: B	randon (Griffin					Attenti	ion:	Jar	ed M	опів	on											5.60	8.4		4	
Address: 818 Kansas Ave	Copy To: J	ared Mo	rrison, He	eath Horr	пуа		\neg	Compa	any Na	me:	WES	STAR	ENE	RGY				RE	GUL	ATOF	RY AC	SENC	Υ			Jey		
Topeka, KS 66612								Addre	ss:		SEE	SEC	TION	A				V	NPI	DES	Γ	GROU	JND V	VATER	۲ ۲	DRINKIN	G WATE	R
Email To: brandon.l.griffin@westarenergy.com	Purchase Ord	er No.:					\dashv	Pace C										1 -	บร	Т	Г	RCRA				OTHER	-	
Phone: (785) 575-8135 Fax:	Project Name	JEC	CCR Gro	undwate	er	TT		Pace P Manag	roject	He	ather	Wils	on, 91	3-563	3-14	07		Sit	te Lo	cation								
Requested Due Date/TAT: 7 DAY	Project Numb	ег.							rofile #:	96	57, 1								s	TATE:	-	K	S	- 1				
			_	-34	TE.					т	Т			4	Re	eque	sted	Ana	lysis	Filte	red (Y/N)						
Section D Valid Matrix C	odes	£ 6		5.8	4 Y E									NIA									П					
Required Client Information MATRIX DRINKING WATER WATER	OL WP AR OT TS	MATRIX CODE (see vaild codes to left) MATRIX CODE (see vaild codes to left) SAMPLE TYPE (G=GRAB C=COMP)	COMPC	SITE	COMPOS ENDIGER	TIME 0 750	_	# OF CONTAINERS	Unpreserved	Pre ONH 3	HCI	Na ₂ S ₂ O ₃	lor	lysis Test	200.7 Total Metals*	200.8 Total Metals**	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226 Radium 228				Residual Chlorine (Y/N)	Pace	Project	No./ La	(a)
3 FGD 4-092316	ı	4 G			9/23	1016		4		3																		03
4 FAA 5-092316	ı	46			9/23	1153		4	1	3				1														004
5 FAA 4 - 092316		UT G		70 5	9/23	1301		4	1	3															+	+	¥	005
6	D.							4																				
7						- 5												-					1	Ш				
8												1											-	Н			-	
9				1.					11	-				1		=	+	+			\perp	-	+	Н		_		
10										-				1	\vdash	4		+		-	\perp		-	\vdash	_			
11					6/03	100.00				1		-	1	-	H	\vdash	+	+		+	+	-	+	\vdash	1	1	1	
12 Dup- 092316		16			9/33		_	4	1-1	3		1 0	CEPTI	D DV			101	_		DATE		TIME	+	Щ	SAME	LE COND	TIONS	
ADDITIONAL COMMENTS	ma	RELINQUI	ISHED BY /	AFFILIAT	ION	DAT	_		TIME	-	11	ZA	CEPTI	DBI	7 AFF	TLIAT	ION		13	1					~/	LE OUND	1	
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li **200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	11/	y,	/Wt	3/41		09/23	16	14	15		y	M	NO		52				9	124	0	920	7-	2	7	X		,
i.					m.										T												'	
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Page		_		SAMPL	ER NAME	AND SIGN	IATUI	RE				1			11					ijĠ.				ပ္	6 3	ealed /N)		ntact
41					PRINT Nan	ne of SAM	PLER	B	rai	de	h	6	rif	54	7									Temp in	Received on Ice (Y/N)	Jdy Sr	1	Samples Intact (Y/N)
of 43					SIGNATUR	RE of SAM	PLER	1	3/	2	1	-			1 D		Signed D/YY):		1/2	23/	16			Ē	Rec	Custody Sealed Cooler (Y/N)		Sam

Chain of Custody

WO#:30197253





Workorder: 60228510 Workorder Name: JEC CCR GROUNDWATER

Owner Received Date: 9/24/2016 Results Requested By: 10/5/2016

Repo	rt To	Elijas ar Prode	Subcontra	ct To					Requested Analysis							
Pace 9608 Lene	Heather Wilson Pace Analytical Pittsburgh Pace Analytical Kansas Pace Analytical Kansas Pace Analytical Pittsburgh Pace Analytica						served C	ontainers	Radium		G					
Item	Sample ID	Sample Type	Collect Date/Tim	Lab ID	Matrix	BP1N			m 226 & 228				h			LAB USE ONLY
1	FGD2-092316	PS	9/23/2016 07:50	60228510001	Water	2			X							001
2	FGD3-092316	PS	9/23/2016 08:56	60228510002	Water	2			X							003
3	FGD4-092316	PS	9/23/2016 10:16	60228510003	Water	2			X							003
4	FAA 5-092316	PS	9/23/2016 11:53	60228510004	Water	2			X							004
5	FAA 4-092316	PS	9/23/2016 13:01	60228510005	Water	2			X							005
6	DUP-092316	PS	9/23/2016 17:00	60228510006	Water	2			X							006
Trans	sfers Released By		D. C. T.										Com	ments		
1 2 3	May Un		Date/Time	Receive		k	S	Date/Tin		095	<i>6</i> 0					
	ler Temperature on R	A 2/A	°C Cus	tody Seal	O _{or N}	IV.	-	ceived or		Yor	(N)			nples I		for N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh Pace KS Project # 30197253 Client Name: Courier: Fed Ex UPS USPS Client Commercial Pace Other Tracking #: 7044653 4584 Custody Seal on Cooler/Box Present: X yes Seals intact: Yes no Type of Ice: Wet Blue None Thermometer Used °C Correction Factor: °C Final Temp: Observed Temp Cooler Temperature Temp should be above freezing to 6°C Date and Initials of person examining contents: 1-27-16 No N/A Yes Comments: Chain of Custody Present: Chain of Custody Filled Out: 3. Chain of Custody Relinquished: Sampler Name & Signature on COC: 5. Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: Samples Arrived within Hold Time: Short Hold Time Analysis (<72hr remaining): 8. Rush Turn Around Time Requested: 9. Sufficient Volume: 10. Correct Containers Used: -Pace Containers Used: 11. Containers Intact: 12. Filtered volume received for Dissolved tests All containers needing preservation have been checked. All containers needing preservation are found to be in compliance with EPA recommendation. Date/time of Initial when preservation completed exceptions: VOA, coliform, TOC, O&G, Phenolics Lot # of added preservative 14. Headspace in VOA Vials (>6mm): 15. Trip Blank Present: Trip Blank Custody Seals Present Initial when Rad Aqueous Samples Screened > 0.5 mrem/hr

Comments/ Resolution		
	 	A SAME AND

Date/Time:

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Client Notification/ Resolution:

Person Contacted:

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Contacted By:

ATTACHMENT 1-3
November 2016 Sampling Event
Laboratory Analytical Report



December 07, 2016

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on November 05, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson

Markon M. Wilson

heather.wilson@pacelabs.com

Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY







CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification Idaho Certification Illinois Certification

Indiana Certification
Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA 051

New York/TNI Certification #: 10888 North Carolina Certification #: 42706

North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282 South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5 USDA Soil Permit #: P330-14-00213 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198 Washington Certification #: C868 West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60231627001	BAA-6-110316	Water	11/03/16 08:38	11/05/16 08:50
60231627002	BAA-2-110316	Water	11/03/16 10:02	11/05/16 08:50
60231627003	BAA-4-110316	Water	11/03/16 11:17	11/05/16 08:50
60231627004	BAA-3-110316	Water	11/03/16 12:32	11/05/16 08:50
60231627005	FGD-1-110316	Water	11/03/16 13:55	11/05/16 08:50
60231627006	FGD-4-110316	Water	11/03/16 14:57	11/05/16 08:50
60231627007	FGD-3-110316	Water	11/03/16 13:55	11/05/16 08:50
60231627008	FGD-2-110316	Water	11/03/16 16:40	11/05/16 08:50
60231627009	FAA-5-110416	Water	11/03/16 08:31	11/05/16 08:50
60231627010	FAA-4-110416	Water	11/03/16 09:28	11/05/16 08:50
60231627011	DUP-110416	Water	11/03/16 06:00	11/05/16 08:50
60231627012	DUP-110316	Water	11/03/16 06:00	11/05/16 08:50
60231627013	FAA-3-110416	Water	11/04/16 10:30	11/05/16 08:50
60231627014	FAA-2-110416	Water	11/04/16 11:30	11/05/16 08:50



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231627001	BAA-6-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627002	BAA-2-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627003	BAA-4-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627004	BAA-3-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627005	FGD-1-110316	EPA 200.7	SMW	7	PASI-K

REPORT OF LABORATORY ANALYSIS

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Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	 JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627006	FGD-4-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627007	FGD-3-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627008	FGD-2-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627009	FAA-5-110416	EPA 200.7	SMW	7	PASI-K
			JGP		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627010	FAA-4-110416	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627011	DUP-110416	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627012	DUP-110316	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0231627013	FAA-3-110416	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
60231627014	FAA-2-110416	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:

14 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:

14 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:

14 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 455898

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60231627003,60232038001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1866968)
 - Mercury
- MSD (Lab ID: 1866969)
 - Mercury



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** December 07, 2016

General Information:

14 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:December 07, 2016

General Information:

14 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:December 07, 2016

General Information:

14 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: December 07, 2016

General Information:

14 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:

14 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- BAA-2-110316 (Lab ID: 60231627002)
- BAA-3-110316 (Lab ID: 60231627004)
- BAA-4-110316 (Lab ID: 60231627003)
- BAA-6-110316 (Lab ID: 60231627001)
- DUP-110316 (Lab ID: 60231627012)
- DUP-110416 (Lab ID: 60231627011)
- FAA-2-110416 (Lab ID: 60231627014)
- FAA-3-110416 (Lab ID: 60231627013)
- FAA-4-110416 (Lab ID: 60231627010)
- FAA-5-110416 (Lab ID: 60231627009)
- FGD-1-110316 (Lab ID: 60231627005)
- FGD-2-110316 (Lab ID: 60231627008)
- FGD-3-110316 (Lab ID: 60231627007)
- FGD-4-110316 (Lab ID: 60231627006)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:

14 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 456713

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60232075004,60232096004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1869910)
 - Sulfate
- MS (Lab ID: 1869912)
 - ChlorideSulfate
- MSD (Lab ID: 1869911)
 - Fluoride
 - Sulfate

QC Batch: 456831

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60232532002,60233017001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1870416)
 - Chloride
- MSD (Lab ID: 1870417)
 - Chloride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: BAA-6-110316	Lab ID: 602	231627001	Collected: 11/03/1	6 08:38	Received: 11	/05/16 08:50 M	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.021	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:08	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:08	7440-41-7	
Boron, Total Recoverable	3.8	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:08	7440-42-8	
Calcium, Total Recoverable	513	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:08	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:08	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:08	7439-92-1	
Lithium	0.095	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:08	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-36-0	
Arsenic, Total Recoverable	0.0012	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:26	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-48-4	
Molybdenum, Total Recoverable	0.0059	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3220	mg/L	5.0	1		11/09/16 11:27		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	183	mg/L	20.0	20		11/29/16 15:27	16887-00-6	
Fluoride	0.62	mg/L	0.20	1		11/29/16 15:13		
Sulfate	2070	mg/L	200	200		11/30/16 03:45	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: BAA-2-110316	Lab ID: 602	231627002	Collected: 11/03/1	6 10:02	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.055	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:19	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:19	7440-41-7	
Boron, Total Recoverable	1.1	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:19	7440-42-8	
Calcium, Total Recoverable	188	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:19	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:19	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:19	7439-92-1	
Lithium	0.020	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:19	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-36-0	
Arsenic, Total Recoverable	0.0062	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-38-2	
Cadmium, Total Recoverable	< 0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:39	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-48-4	
Molybdenum, Total Recoverable	0.044	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	1360	mg/L	5.0	1		11/09/16 11:29		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500	0-H+B					
oH at 25 Degrees C	7.5	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	137	mg/L	10.0	10		11/29/16 16:10	16887-00-6	
Fluoride	0.51	mg/L	0.20	1		11/29/16 15:56	16984-48-8	
Sulfate	983	mg/L	100	100		11/30/16 18:29	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: BAA-4-110316	Lab ID: 602	231627003	Collected: 11/03/1	6 11:17	Received: 11	/05/16 08:50 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.032	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:23	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:23	7440-41-7	
Boron, Total Recoverable	0.92	mg/L	0.10	1		11/09/16 13:23		
Calcium, Total Recoverable	393	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:23	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:23	7440-47-3	
∟ead, Total Recoverable	<0.0050	mg/L	0.0050	1		11/09/16 13:23		
ithium	0.015	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:23	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-36-0	
Arsenic, Total Recoverable	0.0082	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:48	7440-43-9	
Cobalt, Total Recoverable	0.026	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-48-4	
Molybdenum, Total Recoverable	0.13	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-28-0	
45.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury (<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:35	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3820	mg/L	5.0	1		11/09/16 11:30		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	O-H+B					
H at 25 Degrees C	7.2	Std. Units	0.10	1		11/11/16 16:20		H6
000.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	183	mg/L	20.0	20		11/29/16 18:59	16887-00-6	
Fluoride	0.36	mg/L	0.20	1		11/29/16 18:45	16984-48-8	
Sulfate	2800	mg/L	200	200		11/29/16 19:13	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: BAA-3-110316	Lab ID: 602	231627004	Collected: 11/03/1	6 12:32	Received: 11	/05/16 08:50 M	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.015	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:27	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:27	7440-41-7	
Boron, Total Recoverable	2.3	mg/L	0.10	1	11/08/16 09:00			
Calcium, Total Recoverable	507	mg/L	0.10	1	11/08/16 09:00			
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:27	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00			
_ithium	0.095	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:27	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:52	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-48-4	
Molybdenum, Total Recoverable	0.0023	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	C					
Total Dissolved Solids	3150	mg/L	5.0	1		11/09/16 11:30		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	157	mg/L	20.0	20		11/29/16 20:10	16887-00-6	
Fluoride	0.92	mg/L	0.20	1		11/29/16 19:56	16984-48-8	
Sulfate	2290	mg/L	200	200		11/29/16 20:24	1/808-70-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FGD-1-110316	Lab ID: 602	231627005	Collected: 11/03/1	6 13:55	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.31	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:31	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:31	7440-41-7	
Boron, Total Recoverable	0.10	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:31	7440-42-8	
Calcium, Total Recoverable	94.6	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:31	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:31	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1		11/09/16 13:31		
ithium	0.016	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:31	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:56	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-48-4	
Molybdenum, Total Recoverable	0.0013	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-28-0	
45.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	OC .					
Total Dissolved Solids	495	mg/L	5.0	1		11/09/16 11:31		
1500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	49.2	mg/L	5.0	5		11/29/16 20:53	16887-00-6	
- Fluoride	0.32	mg/L	0.20	1		11/29/16 20:39	16984-48-8	
Sulfate	95.4	mg/L	5.0	5		11/29/16 20:53	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FGD-4-110316	Lab ID: 602	231627006	Collected: 11/03/1	6 14:57	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.057	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:35	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:35	7440-41-7	
Boron, Total Recoverable	0.28	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:35	7440-42-8	
Calcium, Total Recoverable	164	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:35	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:35	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:35	7439-92-1	
Lithium	0.015	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:35	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:09	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-48-4	
Molybdenum, Total Recoverable	0.0040	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	947	mg/L	5.0	1		11/09/16 11:32		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	80.9	mg/L	5.0	5		11/29/16 21:21	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		11/29/16 21:07	16984-48-8	
Sulfate	412	mg/L	50.0	50		11/29/16 21:35	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FGD-3-110316	Lab ID: 602	231627007	Collected: 11/03/1	6 13:55	Received: 11	/05/16 08:50 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.19	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:38	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:38	7440-41-7	
Boron, Total Recoverable	0.13	mg/L	0.10	1	11/08/16 09:00			
Calcium, Total Recoverable	160	mg/L	0.10	1	11/08/16 09:00			
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:38	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00			
Lithium	0.016	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:38	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:14	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7440-48-4	
Molybdenum, Total Recoverable	0.0062	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	817	mg/L	5.0	1		11/09/16 11:33		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		11/11/16 16:20		H6
800.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	0.0					
Chloride	66.7	mg/L	5.0	5		11/29/16 22:46	16887-00-6	
Fluoride	0.29	mg/L	0.20	1		11/29/16 21:50	16984-48-8	
Sulfate	313	mg/L	20.0	20		11/29/16 22:04	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FGD-2-110316	Lab ID: 602	31627008	Collected: 11/03/1	6 16:40	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.097	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:42	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:42	7440-41-7	
Boron, Total Recoverable	0.26	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:42	7440-42-8	
Calcium, Total Recoverable	161	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:42	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:42	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:42	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:42	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:18	7440-43-9	
Cobalt, Total Recoverable	0.0016	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7440-48-4	
Molybdenum, Total Recoverable	0.0040	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7439-98-7	
Selenium, Total Recoverable	0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	769	mg/L	5.0	1		11/09/16 11:33		
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	36.6	mg/L	5.0	5		11/30/16 18:44	16887-00-6	
Fluoride	0.35	mg/L	0.20	1		11/29/16 23:01	16984-48-8	
Sulfate	325	mg/L	20.0	20		11/29/16 23:29	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FAA-5-110416	Lab ID: 602	231627009	Collected: 11/03/1	6 08:31	Received: 11	/05/16 08:50	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.011	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:46	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:46	7440-41-7	
Boron, Total Recoverable	1.0	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:46	7440-42-8	
Calcium, Total Recoverable	220	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:46	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:46	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:46	7439-92-1	
Lithium	0.075	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:46	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	3 7440-36-0	
Arsenic, Total Recoverable	0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	3 7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:23	3 7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	3 7440-48-4	
Molybdenum, Total Recoverable	0.0093	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	3 7439-98-7	
Selenium, Total Recoverable	0.0039	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	3 7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:58	3 7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	oc .					
Total Dissolved Solids	1470	mg/L	5.0	1		11/09/16 11:34	ŀ	
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		11/11/16 16:20)	H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	99.6	mg/L	10.0	10		11/29/16 23:57	7 16887-00-6	
Fluoride	0.54	mg/L	0.20	1		11/29/16 23:43		
Sulfate	834	mg/L	200	200		11/30/16 00:12		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FAA-4-110416	Lab ID: 602	231627010	Collected: 11/03/1	6 09:28	Received: 11	/05/16 08:50 M	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.053	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:50	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:50	7440-41-7	
Boron, Total Recoverable	0.36	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:50	7440-42-8	
Calcium, Total Recoverable	205	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:50	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:50	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:50	7439-92-1	
Lithium	0.016	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:50	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:27	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-48-4	
Molybdenum, Total Recoverable	0.0030	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	oc					
Total Dissolved Solids	1170	mg/L	5.0	1		11/09/16 11:35		
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	D-H+B					
pH at 25 Degrees C	7.3	Std. Units	0.10	1		11/11/16 16:20		H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	85.6	mg/L	10.0	10		11/30/16 00:40	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		11/30/16 00:26		
Sulfate	579	mg/L	50.0	50		11/30/16 00:54		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: DUP-110416	Lab ID: 602	231627011	Collected: 11/03/1	6 06:00	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.052	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:54	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:54	7440-41-7	
Boron, Total Recoverable	0.35	mg/L	0.10	1		11/09/16 13:54		
Calcium, Total Recoverable	203	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:54	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:54	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1		11/09/16 13:54		
ithium	0.016	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:54	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:31	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-48-4	
Molybdenum, Total Recoverable	0.0030	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-28-0	
45.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	OC .					
Total Dissolved Solids	1150	mg/L	5.0	1		11/09/16 11:37		
1500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		11/09/16 16:12		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	86.1	mg/L	20.0	20		11/30/16 01:51	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		11/30/16 01:37	16984-48-8	
Sulfate	562	mg/L	50.0	50		11/30/16 18:58	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: DUP-110316	Lab ID: 602	231627012	Collected: 11/03/1	6 06:00	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.053	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:14	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 14:14	7440-41-7	
Boron, Total Recoverable	1.2	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:14	7440-42-8	
Calcium, Total Recoverable	205	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:14	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:14	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:14	7439-92-1	
_ithium	0.015	mg/L	0.010	1	11/08/16 09:00	11/09/16 14:14	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-36-0	
Arsenic, Total Recoverable	0.0075	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:36	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-48-4	
Molybdenum, Total Recoverable	0.054	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EF	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	1460	mg/L	5.0	1		11/09/16 11:37		
1500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		11/09/16 16:12		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	158	mg/L	20.0	20		11/30/16 02:34	16887-00-6	
Fluoride	0.52	mg/L	0.20	1		11/30/16 02:19	16984-48-8	
Sulfate	900	mg/L	200	200		11/30/16 02:48	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FAA-3-110416	Lab ID: 602	231627013	Collected: 11/04/1	6 10:30	Received: 11	/05/16 08:50 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.034	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:18	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 14:18	7440-41-7	
Boron, Total Recoverable	0.95	mg/L	0.10	1	11/08/16 09:00			
Calcium, Total Recoverable	214	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:18	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:18	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:18	7439-92-1	
Lithium	0.017	mg/L	0.010	1	11/08/16 09:00	11/09/16 14:18	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:40	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-48-4	
Molybdenum, Total Recoverable	0.014	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1490	mg/L	5.0	1		11/09/16 11:38		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	6.9	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	89.5	mg/L	10.0	10		11/30/16 03:16	16887-00-6	
Fluoride	0.31	mg/L	0.20	1		11/30/16 03:02	16984-48-8	
Sulfate	896	mg/L	50.0	50		11/30/16 03:30	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Sample: FAA-2-110416	Lab ID: 602	31627014	Collected: 11/04/1	6 11:30	Received: 11	/05/16 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.035	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:22	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/09/16 14:22	7440-41-7	
Boron, Total Recoverable	3.2	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:22	7440-42-8	
Calcium, Total Recoverable	330	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:22	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:22	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:22	7439-92-1	
Lithium	0.018	mg/L	0.010	1	11/08/16 09:00	11/09/16 14:22	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-38-2	
Cadmium, Total Recoverable	< 0.00050	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:44	7440-43-9	
Cobalt, Total Recoverable	0.0012	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-48-4	
Molybdenum, Total Recoverable	0.27	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	oc .					
Total Dissolved Solids	3160	mg/L	5.0	1		11/09/16 11:38		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	68.8	mg/L	10.0	10		11/30/16 17:19	16887-00-6	
Fluoride	0.60	mg/L	0.20	1		11/30/16 18:15	16984-48-8	
Sulfate	2030	mg/L	200	200		11/30/16 17:33	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Mercury

Date: 12/07/2016 10:53 AM

QC Batch: 455898 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

 $Associated \ Lab \ Samples: \qquad 60231627001, \ 60231627002, \ 60231627003, \ 60231627004, \ 60231627005, \ 60231627006, \ 60231627007, \ 6023$

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1866966 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014, 60251607014, 60251607014, 60251607014, 60251607014, 60251607014, 60251607014, 602

 Parameter
 Units
 Blank Reporting Result
 Limit Limit
 Analyzed Analyzed
 Qualifiers

 Mercury
 mg/L
 <0.00020</td>
 0.00020
 11/22/16 12:26

LABORATORY CONTROL SAMPLE: 1866967

LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 103 .005 0.0052 85-115 Mercury mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1866968 1866969

mg/L

MS MSD Spike MS MSD MS MSD 60231627003 Spike % Rec Max Units Conc. % Rec % Rec RPD RPD Parameter Result Conc. Result Result Limits Qual Mercury < 0.00020 .005 .005 0.0028 0.0028 57 70-130 2 20 M1 mg/L 55

 MATRIX SPIKE SAMPLE:
 1866970

 60232038001
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

ND

.005

0.0063

126

70-130

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

QC Batch: 453876 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1858392 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60251607014, 60251607014, 60251607014, 60251607014, 602

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	11/09/16 12:35	
Beryllium	mg/L	< 0.0010	0.0010	11/09/16 12:35	
Boron	mg/L	<0.10	0.10	11/09/16 12:35	
Calcium	mg/L	< 0.10	0.10	11/09/16 12:35	
Chromium	mg/L	< 0.0050	0.0050	11/09/16 12:35	
Lead	mg/L	< 0.0050	0.0050	11/09/16 12:35	
Lithium	mg/L	< 0.010	0.010	11/09/16 12:35	

LABORATORY CONTROL SAMPLE:	1858393					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.1	106	85-115	
Beryllium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.9	99	85-115	
Chromium	mg/L	1	1.0	102	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SI	PIKE DUPLIC	ATE: 185839			1858395							
Parameter	Units	60231598001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	6.3 ug/L	1	1	1.1	1.1	105	105	70-130	0	20	
Beryllium	mg/L	ND	1	1	0.97	0.97	97	97	70-130	0	20	
Boron	mg/L	ND	1	1	0.96	0.96	96	96	70-130	0	20	
Calcium	mg/L	2220 ug/L	10	10	12.2	12.2	99	100	70-130	0	20	
Chromium	mg/L	ND	1	1	1.0	1.0	103	102	70-130	1	20	
Lead	mg/L	ND	1	1	1.0	1.0	105	104	70-130	0	20	
Lithium	mg/L	ND	1	1	1.0	1.0	102	102	70-130	1	20	

Barium	mg/L	60.5 ug/L	1	1.1	105	70-130	
Parameter	Units	60231598002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
MATRIX SPIKE SAMPLE:	1858396	00004500000	Cailes	MC	MC	0/ D aa	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

MATRIX SPIKE SAMPLE:	1858396						
_		60231598002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Beryllium	mg/L	ND	1	0.99	99	70-130	
Boron	mg/L	ND	1	0.98	97	70-130	
Calcium	mg/L	11700 ug/L	10	21.4	97	70-130	
Chromium	mg/L	ND	1	1.0	102	70-130	
Lead	mg/L	ND	1	1.0	105	70-130	
Lithium	mg/L	ND	1	1.0	103	70-130	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

QC Batch: 453882 Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1858415 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 6025014014, 6025014014, 6025014014, 6025014014, 6025014014, 60250140

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	11/28/16 16:18	
Arsenic	mg/L	< 0.0010	0.0010	11/28/16 16:18	
Cadmium	mg/L	< 0.00050	0.00050	11/28/16 16:18	
Cobalt	mg/L	< 0.0010	0.0010	11/28/16 16:18	
Molybdenum	mg/L	< 0.0010	0.0010	11/28/16 16:18	
Selenium	mg/L	< 0.0010	0.0010	11/28/16 16:18	
Thallium	mg/L	< 0.0010	0.0010	11/28/16 16:18	

LABORATORY CONTROL SAMPLE:	1858416					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.041	103	85-115	
Cadmium	mg/L	.04	0.040	100	85-115	
Cobalt	mg/L	.04	0.040	100	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.038	96	85-115	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 18584	17		1858418							
			MS	MSD								
	6	0231627001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	<0.0010	.04	.04	0.041	0.041	101	101	70-130	0	20	
Arsenic	mg/L	0.0012	.04	.04	0.043	0.043	105	105	70-130	1	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.036	0.036	91	91	70-130	0	20	
Cobalt	mg/L	< 0.0010	.04	.04	0.038	0.038	92	93	70-130	1	20	
Molybdenum	mg/L	0.0059	.04	.04	0.050	0.050	110	110	70-130	0	20	
Selenium	mg/L	< 0.0010	.04	.04	0.040	0.042	100	103	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.035	0.036	88	89	70-130	1	20	

MATRIX SPIKE SAMPLE:	1858419						
		60231627002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.041	102	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

MATRIX SPIKE SAMPLE:	1858419						
Davamatan	l leite	60231627002	Spike	MS	MS % Dan	% Rec	O 1:6:
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Arsenic	mg/L	0.0062	.04	0.048	105	70-130	
Cadmium	mg/L	< 0.00050	.04	0.038	94	70-130	
Cobalt	mg/L	< 0.0010	.04	0.039	96	70-130	
Molybdenum	mg/L	0.044	.04	0.088	110	70-130	
Selenium	mg/L	<0.0010	.04	0.037	94	70-130	
Thallium	mg/L	< 0.0010	.04	0.037	92	70-130	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

QC Batch: 454069 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

 $Associated \ Lab \ Samples: \qquad 60231627001, \ 60231627002, \ 60231627003, \ 60231627004, \ 60231627005, \ 60231627006, \ 60231627007, \ 6023$

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1859185 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 11/09/16 11:25

LABORATORY CONTROL SAMPLE: 1859186

LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** 1000 938 94 80-120 mg/L

SAMPLE DUPLICATE: 1859187

60231627001 Max Dup RPD RPD Result Qualifiers Parameter Units Result 3220 Total Dissolved Solids 3180 10 mg/L 1

SAMPLE DUPLICATE: 1859188

Date: 12/07/2016 10:53 AM

60231627010 Dup Max Parameter Units Result Result RPD RPD Qualifiers **Total Dissolved Solids** mg/L 1170 1140 3 10



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

QC Batch: 454194 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231627011, 60231627012

SAMPLE DUPLICATE: 1859816

Date: 12/07/2016 10:53 AM

 Parameter
 Units
 60231381007 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 6.8
 6.8
 0
 5 H6



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

QC Batch: 454625 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627007, 60231627009,

60231627010

SAMPLE DUPLICATE: 1861765

Date: 12/07/2016 10:53 AM

60231480001 Dup Max Parameter Units Result Result **RPD RPD** Qualifiers 8.2 Std. Units 0 5 H6 pH at 25 Degrees C 8.2



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

QC Batch: 454661 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231627006, 60231627008, 60231627013, 60231627014

SAMPLE DUPLICATE: 1862077

Date: 12/07/2016 10:53 AM

 Parameter
 Units
 60231506002 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.0
 7.0
 0
 5 H6



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

QC Batch: 456713 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013

METHOD BLANK: 1869908 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	11/29/16 09:18	
Fluoride	mg/L	<0.20	0.20	11/29/16 09:18	
Sulfate	mg/L	<1.0	1.0	11/29/16 09:18	

LABORATORY CONTROL SAMPLE:	1869909					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIK	E DUPLIC	ATE: 18699	10		1869911							
			MS	MSD								
		60232075004	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	ND	100	100	113	117	103	107	80-120	3	15	
Fluoride	mg/L	ND	50	50	57.9	60.8	116	122	80-120	5	15	M1
Sulfate	mg/L	166	100	100	287	288	121	122	80-120	0	15	M1

MATRIX SPIKE SAMPLE:	1869912						
		60232096004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	97.9	50	160	123	80-120	M1
Fluoride	mg/L	ND	25	30.0	117	80-120	
Sulfate	mg/L	194	50	255	122	80-120	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

QC Batch: 456831 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60231627002, 60231627008, 60231627011, 60231627014

METHOD BLANK: 1870414 Matrix: Water Associated Lab Samples: 60231627002, 60231627008, 60231627011, 60231627014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	11/30/16 14:28	
Fluoride	mg/L	<0.20	0.20	11/30/16 14:28	
Sulfate	mg/L	<1.0	1.0	11/30/16 14:28	

LABORATORY CONTROL SAMPLE:	1870415					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.8	95	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIR	KE DUPLICA	ATE: 18704	16		1870417							
			MS	MSD								
	6	0232532002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	66400	25000	25000	97800	98100	125	127	80-120	0	15	M1
Fluoride	mg/L	ND	12500	12500	13700	14700	107	115	80-120	7	15	
Sulfate	mg/L	19500	25000	25000	48100	48100	115	114	80-120	0	15	

MATRIX SPIKE SAMPLE:	1870418						
Parameter	Units	60233017001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	587	500	1090	101	80-120	
Fluoride	mg/L	ND	250	254	97	80-120	
Sulfate	mg/L	ND	500	572	98	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: BAA-6-110316 Lab ID: 60231627001 Collected: 11/03/16 08:38 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.142 ± 0.342 (0.661) Radium-226 pCi/L 12/05/16 22:01 13982-63-3 C:NA T:89% EPA 904.0 1.73 ± 0.641 (0.939) Radium-228 pCi/L 12/06/16 11:38 15262-20-1 C:62% T:81% Total Radium Total Radium 1.87 ± 0.983 (1.60) pCi/L 12/07/16 11:07 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60231627

Sample: BAA-2-110316 Lab ID: 60231627002 Collected: 11/03/16 10:02 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.479 \pm 0.406 \quad (0.503)$ Radium-226 pCi/L 12/05/16 22:01 13982-63-3 C:NA T:91% EPA 904.0 0.845 ± 0.453 (0.816) Radium-228 pCi/L 12/06/16 11:38 15262-20-1 C:72% T:83% Total Radium Total Radium 1.32 ± 0.859 (1.32) pCi/L 12/07/16 11:07 7440-14-4



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60231627

Sample: BAA-4-110316 Lab ID: 60231627003 Collected: 11/03/16 11:17 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 -0.137 ± 0.314 (0.739) Radium-226 pCi/L 12/05/16 22:01 13982-63-3 C:NA T:90% EPA 904.0 0.456 ± 0.507 (1.07) Radium-228 pCi/L 12/06/16 11:38 15262-20-1 C:77% T:82% Total Radium Total Radium 0.593 ± 0.821 (1.81) pCi/L 12/07/16 11:07 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: BAA-3-110316 Lab ID: 60231627004 Collected: 11/03/16 12:32 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.262 \pm 0.364 \quad (0.608)$ Radium-226 pCi/L 12/05/16 22:01 13982-63-3 C:NA T:90% EPA 904.0 $0.635 \pm 0.416 \quad (0.790)$ Radium-228 pCi/L 12/06/16 11:38 15262-20-1 C:77% T:80% Total Radium Total Radium $0.897 \pm 0.780 \quad (1.40)$ pCi/L 12/07/16 11:07 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: FGD-1-110316 PWS:	Lab ID: 6023162 Site ID:	7005 Collected: 11/03/16 13:55 Sample Type:	Received:	11/05/16 08:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.01 ± 0.577 (0.531) C:NA T:85%	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	0.325 ± 0.388 (0.820) C:73% T:84%	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	1.34 ± 0.965 (1.35)	pCi/L	12/07/16 11:07	7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: FGD-4-110316 PWS:	Lab ID: 602316 Site ID:	Collected: 11/03/16 14:57 Sample Type:	Received:	11/05/16 08:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.149 ± 0.461 (0.892) C:NA T:84%	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	0.345 ± 0.434 (0.922) C:67% T:81%	pCi/L	12/06/16 11:38	3 15262-20-1	
Total Radium	Total Radium Calculation	0.494 ± 0.895 (1.81)	pCi/L	12/07/16 11:07	7 7440-14-4	



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60231627

Sample: FGD-3-110316 Lab ID: 60231627007 Collected: 11/03/16 13:55 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.667 ± 0.568 (0.798) Radium-226 pCi/L 12/05/16 22:32 13982-63-3 C:NA T:88% EPA 904.0 0.131 ± 0.336 (0.749) Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:73% T:88% Total Radium Total Radium $0.798 \pm 0.904 \quad (1.55)$ pCi/L 12/07/16 11:07 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: FGD-2-110316 Lab ID: 60231627008 Collected: 11/03/16 16:40 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.233 \pm 0.356 \quad (0.211)$ Radium-226 pCi/L 12/05/16 22:32 13982-63-3 C:NA T:80% EPA 904.0 $0.470 \pm 0.342 \quad (0.662)$ Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:75% T:87% Total Radium Total Radium $0.703 \pm 0.698 \quad (0.873)$ pCi/L 12/07/16 11:07 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: FAA-5-110416 PWS:	Lab ID: 6023162 Site ID:	77009 Collected: 11/03/16 08:31 Sample Type:	Received:	11/05/16 08:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.135 ± 0.373 (0.724) C:NA T:91%	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	0.821 ± 0.519 (0.988) C:61% T:85%	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	0.956 ± 0.892 (1.71)	pCi/L	12/07/16 11:07	7440-14-4	



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60231627

Sample: FAA-4-110416 Lab ID: 60231627010 Collected: 11/03/16 09:28 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.0681 \pm 0.311 \quad (0.502)$ Radium-226 pCi/L 12/05/16 22:32 13982-63-3 C:NA T:88% EPA 904.0 0.404 ± 0.395 (0.811) Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:68% T:83% Total Radium Total Radium $0.472 \pm 0.706 \quad (1.31)$ pCi/L 12/07/16 11:07 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: DUP-110416 Lab ID: 60231627011 Collected: 11/03/16 06:00 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 1.30 ± 0.679 (0.668) Radium-226 pCi/L 12/05/16 23:00 13982-63-3 C:NA T:91% EPA 904.0 -0.163 ± 0.338 (0.822) Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:66% T:89% Total Radium Total Radium $1.30 \pm 1.02 \quad (1.49)$ pCi/L 12/07/16 11:07 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: DUP-110316 Lab ID: 60231627012 Collected: 11/03/16 06:00 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.907 ± 0.540 (0.514) Radium-226 pCi/L 12/05/16 23:00 13982-63-3 C:NA T:88% EPA 904.0 1.03 ± 0.450 (0.722) Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:68% T:86% Total Radium Total Radium 1.94 ± 0.990 (1.24) pCi/L 12/07/16 11:07 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60231627

Sample: FAA-3-110416 Lab ID: 60231627013 Collected: 11/04/16 10:30 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Method Act ± Unc (MDC) Carr Trac **Parameters** Units Analyzed CAS No. Qual EPA 903.1 $0.0681 \pm 0.353 \quad (0.733)$ Radium-226 pCi/L 12/05/16 23:00 13982-63-3 C:NA T:89% EPA 904.0 $0.0499 \pm 0.328 \quad (0.756)$ Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:65% T:87% Total Radium Total Radium $0.118 \pm 0.681 \quad (1.49)$ pCi/L 12/07/16 11:07 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Sample: FAA-2-110416 Lab ID: 60231627014 Collected: 11/04/16 11:30 Received: 11/05/16 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.203 ± 0.310 (0.499) Radium-226 pCi/L 12/05/16 23:00 13982-63-3 C:NA T:93% EPA 904.0 $0.0530 \pm 0.350 \quad (0.802)$ Radium-228 pCi/L 12/06/16 11:39 15262-20-1 C:67% T:86% Total Radium Total Radium $0.256 \pm 0.660 \quad (1.30)$ pCi/L 12/07/16 11:07 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

QC Batch: 241312 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 60231627012, 60231627013, 60231627014, 602

METHOD BLANK: 1186284 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-2260.214 \pm 0.327 (0.193) C:NA T:87%pCi/L12/05/16 22:01

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

QC Batch: 241313 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1186285 Matrix: Water

Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007,

60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.214 ± 0.294 (0.629) C:76% T:91%
 pCi/L
 12/06/16 11:40

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 12/07/2016 10:53 AM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231627001	BAA-6-110316	EPA 200.7	453876	EPA 200.7	453988
60231627002	BAA-2-110316	EPA 200.7	453876	EPA 200.7	453988
0231627003	BAA-4-110316	EPA 200.7	453876	EPA 200.7	453988
0231627004	BAA-3-110316	EPA 200.7	453876	EPA 200.7	453988
0231627005	FGD-1-110316	EPA 200.7	453876	EPA 200.7	453988
0231627006	FGD-4-110316	EPA 200.7	453876	EPA 200.7	453988
0231627007	FGD-3-110316	EPA 200.7	453876	EPA 200.7	453988
0231627008	FGD-2-110316	EPA 200.7	453876	EPA 200.7	453988
0231627009	FAA-5-110416	EPA 200.7	453876	EPA 200.7	453988
0231627010	FAA-4-110416	EPA 200.7	453876	EPA 200.7	453988
0231627011	DUP-110416	EPA 200.7	453876	EPA 200.7	453988
0231627012	DUP-110316	EPA 200.7	453876	EPA 200.7	453988
0231627013	FAA-3-110416	EPA 200.7	453876	EPA 200.7	453988
0231627014	FAA-2-110416	EPA 200.7	453876	EPA 200.7	453988
0231627001	BAA-6-110316	EPA 200.8	453882	EPA 200.8	453990
0231627002	BAA-2-110316	EPA 200.8	453882	EPA 200.8	453990
0231627003	BAA-4-110316	EPA 200.8	453882	EPA 200.8	453990
0231627004	BAA-3-110316	EPA 200.8	453882	EPA 200.8	453990
0231627005	FGD-1-110316	EPA 200.8	453882	EPA 200.8	453990
0231627006	FGD-4-110316	EPA 200.8	453882	EPA 200.8	453990
0231627007	FGD-3-110316	EPA 200.8	453882	EPA 200.8	453990
0231627008	FGD-2-110316	EPA 200.8	453882	EPA 200.8	453990
0231627009	FAA-5-110416	EPA 200.8	453882	EPA 200.8	453990
0231627010	FAA-4-110416	EPA 200.8	453882	EPA 200.8	453990
0231627011	DUP-110416	EPA 200.8	453882	EPA 200.8	453990
0231627012	DUP-110316	EPA 200.8	453882	EPA 200.8	453990
0231627013	FAA-3-110416	EPA 200.8	453882	EPA 200.8	453990
0231627014	FAA-2-110416	EPA 200.8	453882	EPA 200.8	453990
0231627001	BAA-6-110316	EPA 245.1	455898	EPA 245.1	455994
0231627002	BAA-2-110316	EPA 245.1	455898	EPA 245.1	455994
0231627003	BAA-4-110316	EPA 245.1	455898	EPA 245.1	455994
0231627004	BAA-3-110316	EPA 245.1	455898	EPA 245.1	455994
0231627005	FGD-1-110316	EPA 245.1	455898	EPA 245.1	455994
0231627006	FGD-4-110316	EPA 245.1	455898	EPA 245.1	455994
0231627007	FGD-3-110316	EPA 245.1	455898	EPA 245.1	455994
0231627008	FGD-2-110316	EPA 245.1	455898	EPA 245.1	455994
0231627009	FAA-5-110416	EPA 245.1	455898	EPA 245.1	455994
0231627010	FAA-4-110416	EPA 245.1	455898	EPA 245.1	455994
0231627011	DUP-110416	EPA 245.1	455898	EPA 245.1	455994
0231627012	DUP-110316	EPA 245.1	455898	EPA 245.1	455994
0231627013	FAA-3-110416	EPA 245.1	455898	EPA 245.1	455994
0231627014	FAA-2-110416	EPA 245.1	455898	EPA 245.1	455994
0231627001	BAA-6-110316	EPA 903.1	241312		
0231627002	BAA-2-110316	EPA 903.1	241312		
0231627003	BAA-4-110316	EPA 903.1	241312		
0231627004	BAA-3-110316	EPA 903.1	241312		
0231627005	FGD-1-110316	EPA 903.1	241312		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
0231627006	FGD-4-110316	EPA 903.1	241312	_	
0231627007	FGD-3-110316	EPA 903.1	241312		
0231627008	FGD-2-110316	EPA 903.1	241312		
0231627009	FAA-5-110416	EPA 903.1	241312		
0231627010	FAA-4-110416	EPA 903.1	241312		
0231627011	DUP-110416	EPA 903.1	241312		
0231627012	DUP-110316	EPA 903.1	241312		
0231627013	FAA-3-110416	EPA 903.1	241312		
0231627014	FAA-2-110416	EPA 903.1	241312		
0231627001	BAA-6-110316	EPA 904.0	241313		
0231627002	BAA-2-110316	EPA 904.0	241313		
231627003	BAA-4-110316	EPA 904.0	241313		
231627004	BAA-3-110316	EPA 904.0	241313		
0231627005	FGD-1-110316	EPA 904.0	241313		
0231627006	FGD-4-110316	EPA 904.0	241313		
231627007	FGD-3-110316	EPA 904.0	241313		
0231627008	FGD-2-110316	EPA 904.0	241313		
0231627009	FAA-5-110416	EPA 904.0	241313		
231627010	FAA-4-110416	EPA 904.0	241313		
0231627011	DUP-110416	EPA 904.0	241313		
231627012	DUP-110316	EPA 904.0	241313		
231627013	FAA-3-110416	EPA 904.0	241313		
231627014	FAA-2-110416	EPA 904.0	241313		
0231627001	BAA-6-110316	Total Radium Calculation	242594		
0231627002	BAA-2-110316	Total Radium Calculation	242594		
231627003	BAA-4-110316	Total Radium Calculation	242594		
0231627004	BAA-3-110316	Total Radium Calculation	242594		
0231627005	FGD-1-110316	Total Radium Calculation	242594		
0231627006	FGD-4-110316	Total Radium Calculation	242594		
231627007	FGD-3-110316	Total Radium Calculation	242594		
0231627008	FGD-2-110316	Total Radium Calculation	242594		
0231627009	FAA-5-110416	Total Radium Calculation	242594		
0231627010	FAA-4-110416	Total Radium Calculation	242594		
0231627011	DUP-110416	Total Radium Calculation	242594		
0231627012	DUP-110316	Total Radium Calculation	242594		
0231627013	FAA-3-110416	Total Radium Calculation	242594		
0231627014	FAA-2-110416	Total Radium Calculation	242594		
0231627001	BAA-6-110316	SM 2540C	454069		
0231627002	BAA-2-110316	SM 2540C	454069		
231627003	BAA-4-110316	SM 2540C	454069		
0231627004	BAA-3-110316	SM 2540C	454069		
0231627005	FGD-1-110316	SM 2540C	454069		
0231627006	FGD-4-110316	SM 2540C	454069		
0231627007	FGD-3-110316	SM 2540C	454069		
0231627008	FGD-2-110316	SM 2540C	454069		
0231627009	FAA-5-110416	SM 2540C	454069		
0231627010	FAA-4-110416	SM 2540C	454069		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60231627

Date: 12/07/2016 10:53 AM

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231627011	DUP-110416	SM 2540C	454069	_	•
0231627012	DUP-110316	SM 2540C	454069		
0231627013	FAA-3-110416	SM 2540C	454069		
0231627014	FAA-2-110416	SM 2540C	454069		
60231627001	BAA-6-110316	SM 4500-H+B	454625		
0231627002	BAA-2-110316	SM 4500-H+B	454625		
0231627003	BAA-4-110316	SM 4500-H+B	454625		
0231627004	BAA-3-110316	SM 4500-H+B	454625		
0231627005	FGD-1-110316	SM 4500-H+B	454625		
60231627006	FGD-4-110316	SM 4500-H+B	454661		
60231627007	FGD-3-110316	SM 4500-H+B	454625		
60231627008	FGD-2-110316	SM 4500-H+B	454661		
0231627009	FAA-5-110416	SM 4500-H+B	454625		
0231627010	FAA-4-110416	SM 4500-H+B	454625		
0231627011	DUP-110416	SM 4500-H+B	454194		
60231627012	DUP-110316	SM 4500-H+B	454194		
0231627013	FAA-3-110416	SM 4500-H+B	454661		
60231627014	FAA-2-110416	SM 4500-H+B	454661		
0231627001	BAA-6-110316	EPA 300.0	456713		
0231627002	BAA-2-110316	EPA 300.0	456713		
0231627002	BAA-2-110316	EPA 300.0	456831		
0231627003	BAA-4-110316	EPA 300.0	456713		
0231627004	BAA-3-110316	EPA 300.0	456713		
0231627005	FGD-1-110316	EPA 300.0	456713		
0231627006	FGD-4-110316	EPA 300.0	456713		
0231627007	FGD-3-110316	EPA 300.0	456713		
60231627008	FGD-2-110316	EPA 300.0	456713		
0231627008	FGD-2-110316	EPA 300.0	456831		
60231627009	FAA-5-110416	EPA 300.0	456713		
0231627010	FAA-4-110416	EPA 300.0	456713		
0231627011	DUP-110416	EPA 300.0	456713		
60231627011	DUP-110416	EPA 300.0	456831		
0231627012	DUP-110316	EPA 300.0	456713		
0231627013	FAA-3-110416	EPA 300.0	456713		
0231627014	FAA-2-110416	EPA 300.0	456831		



Sample Condition Upon Receipt



Client Name: Westar Energy	
Courier: FedEx □ UPS □ VIA ☑ Clay □ PEX □ ECI □	Pace □ Xroads □ Client □ Other □
Tracking #: Pace Shipping Label Us	ed? Yes \ No.
Custody Seal on Cooler/Box Present: Yes ✓ No □ Seals intact: Yes	No 🗆
Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐	None □ Other □
Thermometer Used: 17-266 / T-239 Type of Ice: Wet Blue N	one Date and initials of person
Cooler Temperature (°C): As-read(<u>) 7 1 2-2 </u> Corr. Factor <u>cf +0.7 CF -0.5</u> Corre	cted /. 4/1-8/2-9/2 / examining contents:
Temperature should be above freezing to 6°C 1.4	PV11/5/16
Chain of Custody present: ☐Yes ☐No ☐N/A	
Chain of Custody relinquished: ✓ Yes □No □N/A	
Samples arrived within holding time: Yes □No □N/A	
Short Hold Time analyses (<72hr): MISTING WAS AND NA	PH
Rush Turn Around Time requested:	
Sufficient volume:	x
Correct containers used: Yes □No □N/A	
Pace containers used: Yes □No □N/A	
Containers intact: ✓ Yes □No □N/A	, <u> </u>
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? □Yes □No ☑N/A	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Filtered volume received for dissolved tests?	
Sample labels match COC: Date / time / ID / analyses	FAA-4 collected @ 092
Samples contain multiple phases? Matrix: & T ☐Yes █No ☐N/A	A
Containers requiring pH preservation in compliance? ✓ 🗸 🖂 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒	\
(HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	
Cyanide water sample checks: N/A	
Lead acetate strip turns dark? (Record only) □Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve) □Yes □No	
Trip Blank present: □Yes □No ØN/	
Headspace in VOA vials (>6mm): □Yes □No ØN/	A
Samples from USDA Regulated Area: State: □Yes □No ZN/A	A
Additional labels attached to 5035A / TX1005 vials in the field? ☐Yes ☐No 🗹N//	
Client Notification/ Resolution: Copy COC to Client? Y / N	Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	
Project Managan Pavious	***
Project Manager Review:	ate:



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section Required	A Client Information:		Section B Required P	-	Informa	ation:		· _			Section Invoice		mation				Į.			7	_						Page:	1	of	2	:4
ompany		IERGY	Report To:	Bran	idon (Griffin_	140				Attenti	on	Jai	red M	lorris	son	100			L.F							Ť.	2 1			
\ddress:	818 Kansas /	Ave	Copy To:	Jare	d Mor	rison, He	ath Horr	iya			Compa	any Na	ame:	WES	STAF	R EN	ERG	ΘY		2	RE	REGULATORY AGENCY									
	Topeka, KS	66612			73			Address: SEE SECTION A										▶ NPDES ☐ GROUND WATER ☐ DRINKING WA								IG WA	TER				
Email To:	brandon.l.grif	ffin@westarenergy.com	Purchase C	Order N	Vo.:	7.		Pace Quote Reference:									UST RCRA COTHER														
Phone: (785) 575-8135 Fax: Project Name: JEC CCR Groundwa					undwate	r		13	Pace P Manag		He	ather	Wil	son,	913-	563-	1407	7.1	8	Site Location KS											
Request	ed Due Date/TAT:	7 DAY	Project Nur	mber.	П			11			Pace P	rofile #	÷ 96	57, 1			Ţ.		7	1 5	12		STAT	ΓE:	-		_				
		Y 00 - 1			F		57	P = 1				44 9	~					_	Req	ueste	d An	alys	is Fi	ltere	d (Y/N)		- ////				
Section D Valid Matrix Co				left)	<u>(</u>		COLLI	ECTED		Preservatives							N A														
# # 1 2 3	SAMPL (A-Z, 0-9 Sample IDs MUST	DRINKING WATE WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR I,-) OTHER BE UNIQUE DRINKING WATE	WT	WT	_	COMPO STAR	OSITE ET	COMPOS END/GR	TIME 083%	1	L L L # OF CONTAINERS	Unpreserved	H ₂ SO ₄	HCI	NaOH Na.S.O.	de secondo		rest#	200.8 Total Metals**	Total	300.0 Cl, Fl, SO4	2540C TDS	Radium 226	Radium 228			Residual Chlorine (Y/N)	Pace	Project	No./ L	ab I.D. 39[N a] W2 W3
4	BAA- 3-	116316	Y.	WT		- 5	E	11/3/16	1232		4	1	3		5	H								20				100	1		ay
5	FG0-1	-110316		WT			7, 4	11/3/16	1355		4	1	3						I						2		\perp		1_		65
6	FGD-4	-110316		WT	G			11/3/16	1457		4		3					5	=						\perp	_	\perp		1		06
7		3-110316		VT	G			11/3/16	1355		4	1	3		4		3	8	10						84				1_		WF.
8	FGD.	2-110316		M	6			11/3/16	1640		4	1	5					1													OR
9	FAA-5-	110416		Wi	6			11/4/10	083	/_	4	1	3									1					\perp		-	-	069
10	FAA-4-	110416		VT	16	1 1		11/4/6	D*		4	1	J	_				-	E	E.	9-1				\Box	\perp		192	_	_	0(0
11	Dup- 116	9416		W	6		Sugar	11/416	06CD		4	1	3		4	15		1					-			4				-	011-
12	D4P-11	0316	16	W	16			11/3/16	0600)		4	1	3									1				4	1	1.	<u> </u>	4	
	ADDITION	AL COMMENTS		REL	LINQUI	SHED BY /	AFFILIAT	ION	DAT	Έ		TIME		學		CCEF	PTED	BY/	AFFILL	ATION			DAT	-	TIME	100		SAME	LE CONE	-	
	Total Metals: Ba, Be, B		13	7	Y	/W	estiv		11/4/	16	13	OC		8	1	W	M	MS	I			1)	151	16	08		1.4	1	7	-	7
**200.8	Total Metals: Co, As, S	Se, Mo, Cd, Sb, 11	10	- 8		1	381			19-1				1						-1		-	-				1.8		-	-	- 1
	2				2		14				17		201	F					: T	- 7	3					_	29		1	-	
	P				3	47																					2.1	+	1	1	
	Page 63					1 1	SAMPL	ER NAME		_	-	-			/		a	ih			NST.	ř				(E)	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	-	Samples Intact (Y/N)
	3 of 66					- 1		SIGNATUR		_		3	V	1	9	s:		(V)	DATE	Sign		1/6	24	1	6	3	Тетр	Receir Ice (Custody	+	Sample (Y.



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	Section B Required Pro	oject Info	ormation:					Secti Invoic	ion C e inform	mation:	:		e.	1									j.	Page:	2	of	
	Report To: [Brando	n Griffin				2	Attent	tion:	Jar	red M	orriso	on				5						- 10				
Address: 818 Kansas Ave	Copy To:	Jared N	/lorrison, ⊢	eath Hor	nya			Company Name: WESTAR ENERGY REGU										RE	EGULATORY AGENCY								
Topeka, KS 66612		0 7				-	12-	Address SEE SECTION A NPDES										GRO	GROUND WATER DRINKING WATER								
Email To: brandon.l.griffin@westarenergy.com	Purchase Or	der No.						Pace Quote Reference:											RCR	RA .			THER				
Phone: (785) 575-8135 Fax:	5) 575-8135 Fax: Project Name: JEC CCR Groundwater							Pace Project Heather Wilson, 913-563-1407									S	Site Location KS									
Requested Due Date/TAT: 7 DAY	Project Num	ber.							Profile #	96	57, 1		4					,=		STATE	E:			- 1			
		75	T. T	L			5							ď.	R	eque	este	d Ana	lysi	s Filt	erec	1 (Y/N)		_////			
Section D Valid Matrix Co	odes (p) o									Dro	2000	otivos		N/A	Z												
Required Client Information MATRIX DRINKING WATER	CODE DW	codes to left		COLL	ECTED		Z	Preservatives						-		\dashv	-	+	\vdash	\forall	†			TT	///////	,,,,,,,,	
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Chain of Custody

WO#:30201895





Workorder: 60231627

Workorder Name: JEC CCR GROUNDWATER

Custody Seal

Owner Received Date: 11/5/2016 Results Requested By: 12/1/2016

Repo	rt To		Subcontrac	t To							Requested			- J.	. = =
Pace 9608 Lene	her Wilson e Analytical Kansas I Loiret Blvd. exa, KS 66219 ne (913)599-5665		1638 F Suites Greens	nalytical Pittsbu loseytown Road 2,3, & 4 sburg, PA 1560 (724)850-5600	ď				דו						
			Collect				eserved C	ontainers	Radium 226						
Item	Sample ID	Sample Type	Date/Tim e	Lab ID	Matrix	BP1N			& 228 <i>f</i> /	The second secon					LAB USE ONLY
1	BAA-6-110316	PS	11/3/2016 08:38	60231627001	Water	2			X						001
2	BAA-2-110316	PS	11/3/2016 10:02	60231627002	Water	2			Х						002
3	BAA-4-110316	PS	11/3/2016 11:17	60231627003	Water	2			X						003
4	BAA-3-110316	PS	11/3/2016 12:32	60231627004	Water	2			X						<u></u> 204
5	FGD-1-110316	PS	11/3/2016 13:55	60231627005	Water	2			X						005
6	FGD-4-110316	PS	11/3/2016 14:57	60231627006	Water	2			X						004
7	FGD-3-110316	PS	11/3/2016 13:55	60231627007	Water	2			X						001
8	FGD-2-110316	PS	11/3/2016 16:40	60231627008	Water	2			X						008
9	FAA-5-110416	PS	11/3/2016 08:31	60231627009	Water	2			X						009
10	FAA-4-110416	PS	11/3/2016 09:28	60231627010	Water	2			X						010
11	DUP-110416	PS	11/3/2016 06:00	60231627011	Water	2			X						011
12	DUP-110316	PS	11/3/2016 06:00	60231627012	Water	2			X						012
13	FAA-3-110416	PS	11/4/2016 10:30	60231627013	Water	2			X						013
14	FAA-2-110416	PS	11/4/2016 11:30	60231627014	Water	2			X						014
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Received on Ice

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Samples Intact or

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Sample Condit	tion Upon Rece	ipt F	'itts:	ourg	n	
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Courier: Fed Ex U	656 1954		_			
Custody Seal on Cooler/B					s intact: yes	□ no
Thermometer Used	<u> N/4</u>				t Blue (None)	A °C Final Tamp: 4 (\)A °C
•	bserved Temp N	V+	-	Corr	ection Factor <u>: // /</u>	Δ °C Final Temp: Δ VΔ °C
Temp should be above freezing	g to 6°C					Date and Initials of person examining contents:
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Comments:		1	110	1 11//	1.	
Chain of Custody Present:	-	1			2.	
Chain of Custody Filled Out		1		-		
Chain of Custody Relinquish				-	3.	
Sampler Name & Signature		ļ,		 	4.	
Sample Labels match COC:		<u></u>		L	5.	
-Includes date/time/ID/Ar	nalysis <u>Matrix:</u> W	1	r	T		A CONTRACTOR OF THE CONTRACTOR
Samples Arrived within Hold	Time:	/			6.	
Short Hold Time Analysis	(<72hr remaining):		V		7.	
Rush Turn Around Time R	equested:		/		8.	
Sufficient Volume:					9.	
Correct Containers Used:	•	<u> </u>			10.	
-Pace Containers Used:		1				
Containers Intact:					11.	
Filtered volume received for				1	12.	
All containers needing preservatio	n have been checked.	1			13.PH LZ	
All containers needing preserval compliance with EPA recommer		✓			,	
exceptions: VOA, coliform,	TOC, O&G, Phenolics				Initial when KH completed	Date/time of preservation
					Lot # of added preservative	
Headspace in VOA Vials (>6	3mm):			1	14.	
Trip Blank Present:				1	15.	
Trip Blank Custody Seals Pro	esent			1		
Rad Aqueous Samples Scr					Initial when completed:	Date: 11-8-16
Client Notification/ Resolut	ion:		***************************************		John Piloto I. P. M.	
				Date/	Time.	Contacted By:
Comments/ Resolution:						
Commenter (Coolution)						

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 1-4
December 2016 Sampling Event
Laboratory Analytical Report



January 19, 2017

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on December 17, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Charles M. Wilson

Heather Wilson heather.wilson@pacelabs.com Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification Idaho Certification

Illinois Certification
Indiana Certification

Indiana Certification lowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051 New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706 North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification
Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5 USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868

West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60234594001	FGD-1-121516	Water	12/15/16 10:57	12/17/16 09:45
60234594002	FGD-4-121516	Water	12/15/16 12:55	12/17/16 09:45
60234594003	FGD-3-121516	Water	12/15/16 14:08	12/17/16 09:45
60234594004	FGD-2-121516	Water	12/15/16 15:30	12/17/16 09:45
60234594005	DUP-121516	Water	12/15/16 06:00	12/17/16 09:45



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60234594001	FGD-1-121516	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0234594002	FGD-4-121516	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0234594003	FGD-3-121516	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0234594004	FGD-2-121516	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0234594005	DUP-121516	EPA 200.7	JGP	7	PASI-K

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300 0	Ol	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: EPA 200.7

Description: 200.7 Metals, Total **Client:** WESTAR ENERGY **Date:** January 19, 2017

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 459902

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60234340002,60234594003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1882846)
 - Calcium
- MSD (Lab ID: 1882847)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** January 19, 2017

General Information:

5 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** January 19, 2017

General Information:

5 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:January 19, 2017

General Information:

5 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: January 19, 2017

General Information:

5 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 459669

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1881982)
 - Total Dissolved Solids



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:

5 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- DUP-121516 (Lab ID: 60234594005)
- FGD-1-121516 (Lab ID: 60234594001)
- FGD-2-121516 (Lab ID: 60234594004)
- FGD-3-121516 (Lab ID: 60234594003)
- FGD-4-121516 (Lab ID: 60234594002)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 461088

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60235068001,60235068003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1887370)
 - Fluoride

QC Batch: 461555

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60235242001,60235242002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1889268)
 - Chloride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Sample: FGD-1-121516	Lab ID: 602	234594001	Collected: 12/15/1	6 10:57	Received: 12	/17/16 09:45 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.28	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:18	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:18	3 7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:18	7440-42-8	
Calcium, Total Recoverable	90.3	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:18	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:18	3 7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:18	7439-92-1	
ithium	0.016	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:18	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:11	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:11	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:11	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:11	7440-48-4	
Molybdenum, Total Recoverable	0.0012	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:11	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:11	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:11	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	496	mg/L	5.0	1		12/20/16 12:30)	
1500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
oH at 25 Degrees C	7.8	Std. Units	0.10	1		12/28/16 09:32	2	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	44.2	mg/L	5.0	5		01/10/17 21:30	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		01/04/17 16:00	16984-48-8	
Sulfate	91.6	mg/L	5.0	5		01/10/17 21:30		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Sample: FGD-4-121516	Lab ID: 602	234594002	Collected: 12/15/1	6 12:55	Received: 12	/17/16 09:45 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.064	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:21	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:21	7440-41-7	
Boron, Total Recoverable	0.26	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:21	7440-42-8	
Calcium, Total Recoverable	163	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:21	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:21	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:21	7439-92-1	
Lithium	0.017	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:21	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:15	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:15	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:15	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:15	7440-48-4	
Molybdenum, Total Recoverable	0.0037	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:15	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:15	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:15	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:14	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	972	mg/L	5.0	1		12/20/16 12:32	2	
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	7.4	Std. Units	0.10	1		12/28/16 09:33	3	H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	78.2	mg/L	10.0	10		01/10/17 21:46	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		01/04/17 16:13		
Sulfate	369	mg/L	50.0	50		01/11/17 00:20		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Sample: FGD-3-121516	Lab ID: 602	234594003	Collected: 12/15/1	6 14:08	Received: 12	/17/16 09:45 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.15	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:25	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:25	7440-41-7	
Boron, Total Recoverable	0.14	mg/L	0.10	1	12/21/16 15:15			
Calcium, Total Recoverable	164	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:25	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:25	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15			
_ithium	0.018	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:25	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:24	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:24	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:24	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:24	7440-48-4	
Molybdenum, Total Recoverable	0.0056	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:24	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:24	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:24	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:16	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	880	mg/L	5.0	1		12/20/16 12:33		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500	D-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		12/28/16 09:34		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	0.0					
Chloride	70.5	mg/L	5.0	5		01/10/17 22:01	16887-00-6	
Fluoride	0.26	mg/L	0.20	1		01/04/17 16:27	16984-48-8	
Sulfate	335	mg/L	50.0	50		01/11/17 00:35	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Sample: FGD-2-121516	Lab ID: 602	234594004	Collected: 12/15/1	6 15:30	Received: 12	2/17/16 09:45 N	Natrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.072	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:32	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:32	7440-41-7	
Boron, Total Recoverable	0.23	mg/L	0.10	1		12/28/16 19:32		
Calcium, Total Recoverable	121	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:32	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:32	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:32	7439-92-1	
_ithium	0.010	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:32	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:28	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:28	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:28	7440-43-9	
Cobalt, Total Recoverable	0.0011	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:28	7440-48-4	
Molybdenum, Total Recoverable	0.0039	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:28	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:28	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:28	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	632	mg/L	5.0	1		12/20/16 12:33		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500	0-H+B					
oH at 25 Degrees C	7.5	Std. Units	0.10	1		12/28/16 09:35		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	34.3	mg/L	2.0	2		01/10/17 22:17	16887-00-6	
Fluoride	0.34	mg/L	0.20	1		01/04/17 16:41	16984-48-8	
Sulfate	201	mg/L	20.0	20		01/11/17 00:51	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Sample: DUP-121516	Lab ID: 602	234594005	Collected: 12/15/1	6 06:00	Received: 12	2/17/16 09:45 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.0074	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:36	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:36	7440-41-7	
Boron, Total Recoverable	1.2	mg/L	0.10	1		12/28/16 19:36		
Calcium, Total Recoverable	339	mg/L	0.10	1		12/28/16 19:36		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		12/28/16 19:36		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		12/28/16 19:36		
_ithium	0.11	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:36	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:51	7440-36-0	
Arsenic, Total Recoverable	0.0011	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:51	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:51	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:51	7440-48-4	
Molybdenum, Total Recoverable	0.023	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:51	7439-98-7	
Selenium, Total Recoverable	0.0016	mg/L	0.0010	1		12/29/16 16:51		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:51	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	2500	mg/L	5.0	1		12/20/16 12:34		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		12/28/16 09:37		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	102	mg/L	10.0	10		01/10/17 22:32	16887-00-6	
Fluoride	0.82	mg/L	0.20	1		01/04/17 16:54	16984-48-8	
Sulfate	1320	mg/L	200	200		01/11/17 01:06	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

 QC Batch:
 459521
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1881503 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 12/20/16 09:20

LABORATORY CONTROL SAMPLE: 1881504

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0048 96 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1881505 1881506

MS MSD 60234342001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0036 70-130 Mercury mg/L <0.20 ug/L .005 .005 0.0041 81 11 20 73

 MATRIX SPIKE SAMPLE:
 1881507

 60234340001
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

Mercury mg/L <0.00020 .005 0.0049 98 70-130

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

 QC Batch:
 459902
 Analysis Method:
 EPA 200.7

 QC Batch Method:
 EPA 200.7
 Analysis Description:
 200.7 Metals, Total

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1882844 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	12/28/16 18:10	
Beryllium	mg/L	< 0.0010	0.0010	12/28/16 18:10	
Boron	mg/L	<0.10	0.10	12/28/16 18:10	
Calcium	mg/L	<0.10	0.10	12/28/16 18:10	
Chromium	mg/L	< 0.0050	0.0050	12/28/16 18:10	
Lead	mg/L	< 0.0050	0.0050	12/28/16 18:10	
Lithium	mg/L	< 0.010	0.010	12/28/16 18:10	

LABORATORY CONTROL SAMPLE:	1882845					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
	UIIIS		Kesuit	% Kec		Qualifiers
Barium	mg/L	1	0.96	96	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.94	94	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 18828	46		1882847							
Parameter	6 Units	0234340002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.028	1	1	1.0	1.0	98	99	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	1.0	102	103	70-130	1	20	
Boron	mg/L	1.0	1	1	1.9	2.0	92	98	70-130	3	20	
Calcium	mg/L	303	10	10	297	303	-60	-3	70-130	2	20	M1
Chromium	mg/L	< 0.0050	1	1	0.93	0.97	93	97	70-130	4	20	
Lead	mg/L	< 0.0050	1	1	1.0	1.0	99	101	70-130	2	20	
Lithium	mg/L	0.024	1	1	1.1	1.1	104	106	70-130	2	20	

MATRIX SPIKE SAMPLE:	1882848						
		60234594003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.15	1	1.1	97	70-130	
Beryllium	mg/L	< 0.0010	1	1.0	102	70-130	
Boron	mg/L	0.14	1	1.1	95	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

MATRIX SPIKE SAMPLE:	1882848						
Parameter	Units	60234594003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	164	10	172	85	70-130	
Chromium	mg/L	< 0.0050	1	0.93	93	70-130	
Lead	mg/L	< 0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.018	1	1.1	104	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

 QC Batch:
 459903
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1882849 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	12/29/16 14:56	
Arsenic	mg/L	< 0.0010	0.0010	12/29/16 14:56	
Cadmium	mg/L	< 0.00050	0.00050	12/29/16 14:56	
Cobalt	mg/L	< 0.0010	0.0010	12/29/16 14:56	
Molybdenum	mg/L	< 0.0010	0.0010	12/29/16 14:56	
Selenium	mg/L	< 0.0010	0.0010	12/29/16 14:56	
Thallium	mg/L	< 0.0010	0.0010	12/29/16 14:56	

LABORATORY CONTROL SAMPLE:	1882850					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.038	95	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.039	96	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.037	93	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 18828	51		1882852							
Parameter	6 Units	60234340003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	.04	.04	0.039	0.039	97	97	70-130	0	20	
Arsenic	mg/L	< 0.0010	.04	.04	0.037	0.037	93	92	70-130	1	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.035	0.035	86	87	70-130	0	20	
Cobalt	mg/L	0.0029	.04	.04	0.038	0.038	87	87	70-130	0	20	
Molybdenum	mg/L	< 0.0010	.04	.04	0.041	0.042	101	102	70-130	2	20	
Selenium	mg/L	< 0.0010	.04	.04	0.035	0.035	87	88	70-130	2	20	
Thallium	mg/L	<0.0010	.04	.04	0.037	0.037	93	93	70-130	0	20	

MATRIX SPIKE SAMPLE:	1882853						
		60234594002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	97	70-130	
Arsenic	mg/L	< 0.0010	.04	0.037	91	70-130	
Cadmium	mg/L	< 0.00050	.04	0.036	90	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

MATRIX SPIKE SAMPLE:	1882853						
Parameter	Units	60234594002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.036	89	70-130	
Molybdenum	mg/L	0.0037	.04	0.044	102	70-130	
Selenium	mg/L	<0.0010	.04	0.034	84	70-130	
Thallium	mg/L	<0.0010	.04	0.038	95	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Qualifiers



QUALITY CONTROL DATA

JEC CCR GROUNDWATER Project:

Pace Project No.: 60234594

QC Batch: 459669 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1881980 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

Blank

Reporting Parameter Limit Analyzed Units Result

Total Dissolved Solids <5.0 5.0 12/20/16 12:22 mg/L

LABORATORY CONTROL SAMPLE: 1881981

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 975 98 80-120

SAMPLE DUPLICATE: 1881982

60234338001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 3610 10 D6 **Total Dissolved Solids** 3230 11 mg/L

SAMPLE DUPLICATE: 1881983

Date: 01/19/2017 08:09 AM

60234594001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 496 **Total Dissolved Solids** mg/L 502 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

 QC Batch:
 460511
 Analysis Method:
 SM 4500-H+B

 QC Batch Method:
 SM 4500-H+B
 Analysis Description:
 4500H+B pH

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

SAMPLE DUPLICATE: 1884873

Date: 01/19/2017 08:09 AM

		60234593001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	6.9	1		 5 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

 QC Batch:
 461088
 Analysis Method:
 EPA 300.0

 QC Batch Method:
 EPA 300.0
 Analysis Description:
 300.0 IC Anions

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1887366 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 01/04/17 12:48

LABORATORY CONTROL SAMPLE: 1887367

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.7 106 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1887368 1887369

MS MSD 60235068001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride ND 80-120 mg/L 2.5 2.5 3.1 3.1 118 119 0 15

MATRIX SPIKE SAMPLE: 1887370 MS 60235068003 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers 0.30 3.3 121 80-120 M1 Fluoride mg/L 2.5

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Chloride

Date: 01/19/2017 08:09 AM

Sulfate

 QC Batch:
 461555
 Analysis Method:
 EPA 300.0

 QC Batch Method:
 EPA 300.0
 Analysis Description:
 300.0 IC Anions

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1889265 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

Blank Reporting Limit Qualifiers Parameter Units Result Analyzed <1.0 01/10/17 17:09 mg/L 1.0 mg/L <1.0 1.0 01/10/17 17:09

LABORATORY CONTROL SAMPLE: 1889266

Spike LCS LCS % Rec
Parameter Units Conc. Result % Rec Limits Qualifiers

 Chloride
 mg/L
 5
 4.8
 97
 90-110

 Sulfate
 mg/L
 5
 4.8
 97
 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1889267

MS MSD

60235242001 Spike Spike MS MSD MS MSD % Rec Max

Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qui

Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 2960 2500 2500 5640 5980 120 134 80-120 6 15 M1 Sulfate mg/L ND 2500 2500 3340 3410 116 118 80-120 2 15

MATRIX SPIKE SAMPLE: 1889269 MS MS 60235242002 % Rec Spike Parameter Units Result Conc. Result % Rec Limits Qualifiers Chloride 1150 500 1720 113 80-120 mg/L 131 80-120 Sulfate mg/L 500 694 113

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60234594

Sample: FGD-1-121516 Lab ID: 60234594001 Collected: 12/15/16 10:57 Received: 12/17/16 09:45 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.630 \pm 0.499 \quad (0.678)$ Radium-226 pCi/L 01/18/17 11:02 13982-63-3 C:NA T:91% EPA 904.0 0.128 ± 0.331 (0.740) 01/17/17 15:03 15262-20-1 Radium-228 pCi/L C:69% T:82% Total Radium Total Radium $0.758 \pm 0.830 \quad (1.42)$ pCi/L 01/19/17 08:23 7440-14-4



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60234594

Sample: FGD-4-121516 Lab ID: 60234594002 Collected: 12/15/16 12:55 Received: 12/17/16 09:45 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.582 \pm 0.462 \quad (0.601)$ Radium-226 pCi/L 01/18/17 11:19 13982-63-3 C:NA T:88% EPA 904.0 $0.736 \pm 0.392 \quad (0.670)$ 01/17/17 15:03 15262-20-1 Radium-228 pCi/L C:66% T:79% Total Radium Total Radium 1.32 ± 0.854 (1.27) pCi/L 01/19/17 08:23 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Sample: FGD-3-121516 Lab ID: 60234594003 Collected: 12/15/16 14:08 Received: 12/17/16 09:45 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.413 \pm 0.507 \quad (0.827)$ Radium-226 pCi/L 01/18/17 11:29 13982-63-3 C:NA T:86% EPA 904.0 $0.435 \pm 0.379 \quad (0.761)$ 01/17/17 15:03 15262-20-1 Radium-228 pCi/L C:65% T:83% Total Radium Total Radium $0.848 \pm 0.886 \quad (1.59)$ pCi/L 01/19/17 08:23 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Sample: FGD-2-121516 Lab ID: 60234594004 Collected: 12/15/16 15:30 Received: 12/17/16 09:45 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.461 ± 0.503 (0.791) Radium-226 pCi/L 01/18/17 11:42 13982-63-3 C:NA T:88% EPA 904.0 $0.405 \pm 0.393 \quad (0.800)$ 01/17/17 11:45 15262-20-1 Radium-228 pCi/L C:62% T:82% Total Radium Total Radium $0.866 \pm 0.896 \quad (1.59)$ pCi/L 01/19/17 08:23 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Sample: DUP-121516 Lab ID: 60234594005 Collected: 12/15/16 06:00 Received: 12/17/16 09:45 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.253 \pm 0.352 \quad (0.587)$ Radium-226 pCi/L 01/18/17 11:42 13982-63-3 C:NA T:90% EPA 904.0 $0.256 \pm 0.389 \quad (0.839)$ 01/17/17 11:45 15262-20-1 Radium-228 pCi/L C:67% T:79% Total Radium Total Radium 0.509 ± 0.741 (1.43) pCi/L 01/19/17 08:23 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

QC Batch: 245951 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1209764 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 0.132 ± 0.301 (0.178) C:NA T:86%
 pCi/L
 01/18/17 10:45

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

 QC Batch:
 245952
 Analysis Method:
 EPA 904.0

 QC Batch Method:
 EPA 904.0
 Analysis Description:
 904.0 Radium 228

 Associated Lab Samples:
 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

METHOD BLANK: 1209765 Matrix: Water

Associated Lab Samples: 60234594001, 60234594002, 60234594003, 60234594004, 60234594005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.0251 ± 0.336 (0.783) C:63% T:80%
 pCi/L
 01/17/17 11:52

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 01/19/2017 08:09 AM

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60234594001	FGD-1-121516	EPA 200.7	459902	EPA 200.7	459945
60234594002	FGD-4-121516	EPA 200.7	459902	EPA 200.7	459945
60234594003	FGD-3-121516	EPA 200.7	459902	EPA 200.7	459945
60234594004	FGD-2-121516	EPA 200.7	459902	EPA 200.7	459945
60234594005	DUP-121516	EPA 200.7	459902	EPA 200.7	459945
60234594001	FGD-1-121516	EPA 200.8	459903	EPA 200.8	459947
60234594002	FGD-4-121516	EPA 200.8	459903	EPA 200.8	459947
60234594003	FGD-3-121516	EPA 200.8	459903	EPA 200.8	459947
60234594004	FGD-2-121516	EPA 200.8	459903	EPA 200.8	459947
60234594005	DUP-121516	EPA 200.8	459903	EPA 200.8	459947
60234594001	FGD-1-121516	EPA 245.1	459521	EPA 245.1	459549
60234594002	FGD-4-121516	EPA 245.1	459521	EPA 245.1	459549
60234594003	FGD-3-121516	EPA 245.1	459521	EPA 245.1	459549
60234594004	FGD-2-121516	EPA 245.1	459521	EPA 245.1	459549
60234594005	DUP-121516	EPA 245.1	459521	EPA 245.1	459549
60234594001	FGD-1-121516	EPA 903.1	245951		
60234594002	FGD-4-121516	EPA 903.1	245951		
60234594003	FGD-3-121516	EPA 903.1	245951		
60234594004	FGD-2-121516	EPA 903.1	245951		
0234594005	DUP-121516	EPA 903.1	245951		
60234594001	FGD-1-121516	EPA 904.0	245952		
60234594002	FGD-4-121516	EPA 904.0	245952		
60234594003	FGD-3-121516	EPA 904.0	245952		
60234594004	FGD-2-121516	EPA 904.0	245952		
60234594005	DUP-121516	EPA 904.0	245952		
60234594001	FGD-1-121516	Total Radium Calculation	246856		
60234594002	FGD-4-121516	Total Radium Calculation	246856		
60234594003	FGD-3-121516	Total Radium Calculation	246856		
60234594004	FGD-2-121516	Total Radium Calculation	246856		
60234594005	DUP-121516	Total Radium Calculation	246856		
60234594001	FGD-1-121516	SM 2540C	459669		
60234594002	FGD-4-121516	SM 2540C	459669		
60234594003	FGD-3-121516	SM 2540C	459669		
60234594004	FGD-2-121516	SM 2540C	459669		
60234594005	DUP-121516	SM 2540C	459669		
60234594001	FGD-1-121516	SM 4500-H+B	460511		
60234594002	FGD-4-121516	SM 4500-H+B	460511		
60234594003	FGD-3-121516	SM 4500-H+B	460511		
60234594004	FGD-2-121516	SM 4500-H+B	460511		
60234594005	DUP-121516	SM 4500-H+B	460511		
60234594001	FGD-1-121516	EPA 300.0	461088		
60234594001	FGD-1-121516	EPA 300.0	461555		
60234594002	FGD-4-121516	EPA 300.0	461088		
			.0.500		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234594

Date: 01/19/2017 08:09 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60234594002	FGD-4-121516	EPA 300.0	461555		
60234594003	FGD-3-121516	EPA 300.0	461088		
60234594003	FGD-3-121516	EPA 300.0	461555		
60234594004	FGD-2-121516	EPA 300.0	461088		
60234594004	FGD-2-121516	EPA 300.0	461555		
60234594005	DUP-121516	EPA 300.0	461088		
60234594005	DUP-121516	EPA 300.0	461555		



Sample Condition Upon Receipt



Client Name: Wester Energy			
, ,	PEX 🗆 ECI 🗆	Pace □ Xroads □	Client □ Other □
Tracking #: Pac	e Shipping Label Used	? Yes □ Nø □	
Custody Seal on Cooler/Box Present: Yes ☑ No □	Seals intact: Yes	No □	
Packing Material: Bubble Wrap ☐ Bubble Bags I	□ Foam □	None ☐ Othe	er 🗆
Thermometer Used: 1-266 / T-239 Type of	fice: Wet Blue Nor	ne	[D. 4
Cooler Temperature (°C): As-read 1:3/0-2 Corr. Fact	or CF (0.7) CF -0.5 Correct	ed 2-0//-0	Date and initials of person examining contents:
Temperature should be above freezing to 6°C		r	p~12/17/16
Chain of Custody present:	ZYes □No □N/A		
Chain of Custody relinquished:	Yes □No □N/A		
Samples arrived within holding time:	✓Yes □No □N/A		
Short Hold Time analyses (<72hr):	ZYes □No □N/A	PH	
Rush Turn Around Time requested:	□Yes ☑No □N/A	'4	
Sufficient volume:	□Ves □No □N/A		
Correct containers used:	ZYes □No □N/A		
Pace containers used:	☑Yes □No □N/A		
Containers intact:	ØYes □No □N/A		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ☑N/A		•
Filtered volume received for dissolved tests?	□Yes □No ☑N/A		
Sample labels match COC: Date / time / ID / analyses	□x es □No □N/A		
Samples contain multiple phases? Matrix:	□Yes No □N/A		
Containers requiring pH preservation in compliance?	✓Yes □No □N/A		
(HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)			
Cyanide water sample checks:			
Lead acetate strip tums dark? (Record only)	□Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:	□Yes □No □M/A		
Headspace in VOA vials (>6mm):	□Yes □No □N/A		
Samples from USDA Regulated Area: State:	□Yes □No ZN/A		
Additional labels attached to 5035A / TX1005 vials in the field	? □Yes □No ØN/A		
Client Notification/ Resolution: Copy COC t	o Client? Y / N	Field Data Required?	Y / N
Person Contacted: Date/	Time:		
Comments/ Resolution:			
Project Manager Review:	Date):	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT, All relevant fields must be completed accurately.

Section Required	A Client Information:	Section B Required Pro	ject Info	mation:					Secti Invoic		matio	n:												L	Page:		of	4	
Company	WESTAR ENERGY	Report To: B	randor	Griffin					Attent	tion:	Ja	ared N	Morri	son					1										
Address:	818 Kansas Ave	Copy To: J	ared M	orrison, H	eath Hor	nya			Comp	any N	ame:	WE	STA	R EN	NER	3Y			RE	GUL	ATOF	RYA	GENC	Y					
	Topeka, KS 66612								Addre	ess:		SEE	SE	CTIC	N A				F	NF	DES	Γ	GRO	UND	WATE	R F	DRINKING	WATER	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Ord	ler No.:						Pace C Refere										7	US	T	Γ	RCR	A.		Г	OTHER		- 1
Phone:	(785) 575-8135 Fax:	Project Name	JE	CCR Gr	oundwate	er				Project	Н	eathe	er Wi	ilson,	913	-563-	1407		S	ite L	ocation	1			E				
Request	ed Due Date/TAT: 7 DAY	Project Numb	er.							Profile a	#: 96	357, 1	1	-		_	т			5	STATE.		K	S	_ [
			_				_		_	-	т				7		Requ	ieste	d Ana	lysi	s Filte	red (Y/N)	iii.	VIII				
	Section D Valid Matrix C	odes	2 ^					П							7	N X	Т	П	T	П		П		1	V ///				
	Required Client Information MATRIX	CODE	codes to left)		COLL	ECTED		_		H	Pr	esen	ativ	es	-	>	+	1	+	Н	+	-	-H	4	1//				
	DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL SAMPLE ID WIPE AR	OL WP	(S=GRAB	COMP STA		COMPOS END/GR	SITE AB	AT COLLECTION	VERS							Test#	Metals**	Mercury	400						orine (Y/N)	-	7345	-94	
ITEM #	(A-Z, 0-9 / ,-) OTHER Sample IDs MUST BE UNIQUE	OT TS	MATRIX CODE SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	HCI	NaOH	Na ₂ S ₂ O ₃ Methanol	Other	Analysis Test	Total	245.1 Total Mercury	4500 H+B	2540C TDS	Radium 228				Residual Chlorine (Y/N)		Project N		I.D.
1	9800 F6D-1-12/5/6	_	VT G	-	un=	1215/6	1057		4	1	3				\Box	80						1000	nu		\Box	1BP2N	20 286	1/20	w
2	F60-4-121516		16	1316	100	121516	1255	=	4	1	3				П	2		9							\Box	ĺ	1		er
3	FGO-3-121516	0	JG	i.		121516	1408		4	t	3					100											1		uz
4	FGO-2-121516		56			121516	1530	7	4	1	3					3L							1			+	+		My
5									-							3	1								\sqcup				
6	7.0				K										Ц										\perp				
7					E.,					Ш	4				Ц				_		\perp				\perp				
8											1		Н	\perp	Н		1		+		\perp	1	1	4	+				
9	DUP-121516		JT 6	6		121516	0600		4	11	- 3	3			Н			H	+	-		18	24	4	+	+	- d		15
10								-				1		-	Н		4		+	-	\vdash	+		1	+				_
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	ADDITIONAL COMMENTS	-10	RELINO	UISHED BY	AFFILIAT	TION	DAT	_		TIME			1	ACCE	PTED	BY/A	VEFILIA	ATION	JV D	-	DATE		TIME	4		SAMP	LE CONDIT		
*200.7	Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	113	γ	Y	West	V	12/16	16	15	14	5	4	M	n	M	M	52			12	17/4	0	945	12	.0	7	7	ア	
**200.8	Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	0										V												1	6.	7	4	Y	
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	9 40 of 42					PRINT Nan	ne of SAM	PLER	6	3.12	de	3	6	· A	Ĵ	RV		Signe	d						Temp In °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	mples Int	(Y/N)
	42					SIGNATUR	E of SAM	PLER	/	3	Y	Z						DD/YY)	. 17	4/1	6/1	6		Ш	-	<u>~</u>	ă ŏ	Sar	

Chain of Custody

WO#:30206142





Workorder: 60234594

Workorder Name: JEC CCR GROUNDWATER

Owner Received Date: 12/17/2016 Results Requested By: 1/12/2017

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		N. 1955	Subcontra	ot To					0.00				Reques	ted Analy	ysis			
Pace 9608 Lene	her Wilson Analytical Kansas Loiret Blvd. exa, KS 66219 ne (913)599-5665		1638 F Suites Greens	analytical Pittsbo Roseytown Road 2,3, & 4 sburg, PA 1560 (724)850-5600	1	Dro	scanyad	Contain		Radium 226								
ltem	Sample ID	Sample Type	Collect Date/Tim	Lab ID	Matrix	BP1N	served	Contain	00	6 & Total Sum	Radium 228							LAB USE ONLY
1	FGD-1-121516	PS	12/15/2016 10:57	60234594001	Water	2				Х	Χ							001
2	FGD-4-121516	PS	12/15/2016 12:55	60234594002	Water	2				Х	Χ							007
3	FGD-3-121516	PS	12/15/2016 14:08	60234594003	Water	2				Х	Χ							003
4	FGD-2-121516	PS	12/15/2016 15:30	60234594004	Water	2				Х	Χ						$\vdash \uparrow$	004
5	DUP-121516	PS	12/15/2016 06:00	60234594005	Water	2				Х	Χ							005
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Trans	fers Released By	_	Date/Time	Receive	d			Dat	e/Time	9								
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^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh

Pace Analytical (Client Name:	Po	200		ICS		Project#
Courier: D Fed Ex ロ U Tracking #: フゔリリ	1PS USPS Clie 6657 8478	ent □	Comr	nerci	al □ Pace Othe	эг	<u></u>
Custody Seal on Cooler/B					als intact:		no
Thermometer Used	NA				et Blue None) _	
Cooler Temperature O	bserved Temp	1/Á	٠c		rrection Factor:		°C Final Temp: °C
Temp should be above freezing		-/	_				
							Date and Initials of person examining contents: ML 12-20-16
Comments:		Yes	No	N/	A		contents, y = ya == 10
Chain of Custody Present:	19-7-1-1 (vision to the control of t	\geq		_	1.		
Chain of Custody Filled Out:		\geq			2.		
Chain of Custody Relinquish	ed:	\geq	<u></u> ,		3.		
Sampler Name & Signature of	on COC:	Ļ.,	\geq		4.		
Sample Labels match COC:	~	\cong			5.		
-Includes date/time/ID/Ana	alysis Matrix: 📐	14	r	-			
Samples Arrived within Hold	Time:	\times			6.		
Short Hold Time Analysis (<72hr remaining):		\times		7.		
Rush Turn Around Time Re	quested:		\times		8.		
Sufficient Volume:		X			9.		
Correct Containers Used:		$ \times $			10.		
-Pace Containers Used:		X					
Containers Intact:		\times			11.		
Filtered volume received for D				\preceq	12.		
All containers needing preservation All containers needing preservatio compliance with EPA recommend	n are found to be in	X X			13. PH <	2	
exceptions: VOA, coliform, To	OC, O&G, Phenolics				Initial when completed Lot # of added preservative		Date/time of reservation
	nm):			X	14.		
Frip Blank Present:			X		15.	. 0	
Frip Blank Custody Seals Pres	ent			X			
Rad Aqueous Samples Scree		,	X		Initial when completed:	ID.	ate: 12-20-16
Client Notification/ Resolutio	n:					10	(, / Q
Person Contacted:			D	ate/T	ïme:		Contacted By:
Comments/ Resolution:							
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Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 1-5
February 2017 Sampling Event
Laboratory Analytical Report





March 08, 2017

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on February 11, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Danson Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

JEC CCR GROUNDWATER Project:

Pace Project No.: 60237751

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040 **Guam Certification**

Hawaii Certification

Idaho Certification

Illinois Certification Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133 Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868 West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Lab ID	Sample ID	Matrix	Date Collected	Date Received	
60237751001	FGD-1-020917	Water	02/09/17 12:12	02/11/17 09:05	
60237751002	FGD-2-020917	Water	02/09/17 13:18	02/11/17 09:05	
60237751003	FGD-3-020917	Water	02/09/17 14:29	02/11/17 09:05	
60237751004	FGD-4-020917	Water	02/09/17 15:49	02/11/17 09:05	



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60237751001	FGD-1-020917	EPA 200.7	MDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	JMC1	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0237751002	FGD-2-020917	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0237751003	FGD-3-020917	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0237751004	FGD-4-020917	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: March 08, 2017

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 465590

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60237510001,60237510002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1905575)
 - Calcium
- MSD (Lab ID: 1905574)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: March 08, 2017

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: March 08, 2017

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** March 08, 2017

General Information:

4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:March 08, 2017

General Information:

4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:March 08, 2017

General Information:

4 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: March 08, 2017

General Information:

4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: March 08, 2017

General Information:

4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- FGD-1-020917 (Lab ID: 60237751001)
- FGD-2-020917 (Lab ID: 60237751002)
- FGD-3-020917 (Lab ID: 60237751003)
- FGD-4-020917 (Lab ID: 60237751004)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: March 08, 2017

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

Sample: FGD-1-020917	Lab ID: 602	237751001	Collected: 02/09/1	7 12:12	Received: 02	/11/17 09:05 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.27	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:34	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:34	7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1		02/17/17 12:34		
Calcium, Total Recoverable	90.4	mg/L	0.10	1		02/17/17 12:34		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:34	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		02/17/17 12:34		
_ithium	0.014	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:34	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:24	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:24	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:24	7440-43-9	
Cobalt, Total Recoverable	0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:24	7440-48-4	
Molybdenum, Total Recoverable	0.0083	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:24	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:24	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:24	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	505	mg/L	5.0	1		02/16/17 14:42		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		02/13/17 13:41		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	0.0					
Chloride	62.5	mg/L	10.0	10		02/15/17 13:47	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		02/14/17 20:18	16984-48-8	
Sulfate	89.5	mg/L	10.0	10		02/15/17 13:47	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

Sample: FGD-2-020917	Lab ID: 602	237751002	Collected: 02/09/1	7 13:18	Received: 02	2/11/17 09:05 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.072	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:40	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:40	7440-41-7	
Boron, Total Recoverable	0.24	mg/L	0.10	1		02/17/17 12:40		
Calcium, Total Recoverable	118	mg/L	0.10	1		02/17/17 12:40		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		02/17/17 12:40		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		02/17/17 12:40		
Lithium	<0.010	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:40	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:28	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:28	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:28	7440-43-9	
Cobalt, Total Recoverable	0.0014	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:28	7440-48-4	
Molybdenum, Total Recoverable	0.0045	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:28	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		02/22/17 13:28		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:28	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	593	mg/L	5.0	1		02/16/17 14:42		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.4	Std. Units	0.10	1		02/16/17 09:46		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	33.1	mg/L	2.0	2		02/15/17 14:01	16887-00-6	
Fluoride	0.39	mg/L	0.20	1		02/14/17 21:01	16984-48-8	
Sulfate	191	mg/L	20.0	20		02/15/17 14:15	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

Sample: FGD-3-020917	Lab ID: 60	237751003	Collected: 02/09/1	7 14:29	Received: 02	2/11/17 09:05 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.13	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:42	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:42	7440-41-7	
Boron, Total Recoverable	0.16	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:42	7440-42-8	
Calcium, Total Recoverable	159	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:42	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:42	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:42	7439-92-1	
_ithium	0.014	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:42	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:33	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:33	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:33	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:33	7440-48-4	
Molybdenum, Total Recoverable	0.0058	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:33	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:33	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:33	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	851	mg/L	5.0	1		02/16/17 14:43		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.4	Std. Units	0.10	1		02/16/17 09:48		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	67.2	mg/L	5.0	5		02/15/17 14:29	16887-00-6	
Fluoride	0.27	mg/L	0.20	1		02/14/17 21:16	16984-48-8	
Sulfate	334	mg/L	50.0	50		02/15/17 14:43	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

Sample: FGD-4-020917	Lab ID: 602	237751004	Collected: 02/09/1	7 15:49	Received: 02	/11/17 09:05 N	Natrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.058	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:45	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:45	7440-41-7	
Boron, Total Recoverable	0.26	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:45	7440-42-8	
Calcium, Total Recoverable	169	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:45	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:45	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00			
ithium	0.012	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:45	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:37	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:37	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:37	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:37	7440-48-4	
Molybdenum, Total Recoverable	0.0039	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:37	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:37	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:37	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	981	mg/L	5.0	1		02/16/17 14:43		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	0-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		02/16/17 09:49		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	79.6	mg/L	10.0	10		02/15/17 14:57	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		02/14/17 21:30	16984-48-8	
Sulfate	393	mg/L	50.0	50		02/15/17 15:11	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

MATRIX SPIKE SAMPLE:

Date: 03/08/2017 03:00 PM

QC Batch: 465533 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1905322 Matrix: Water
Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 02/17/17 12:30

LABORATORY CONTROL SAMPLE: 1905323

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0053 106 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905324 1905325

1905326

MS MSD 60237454001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0050 70-130 20 Mercury mg/L .005 .005 0.0052 104 100

60237584003 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers ND 70-130 Mercury mg/L .005 0.0052 103

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

LABORATORY CONTROL SAMPLE: 1905572

Lithium

Date: 03/08/2017 03:00 PM

Pace Project No.: 60237751

QC Batch: 465590 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1905571 Matrix: Water

mg/L

0.024

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	< 0.0050	0.0050	02/17/17 12:14	
Beryllium	mg/L	< 0.0010	0.0010	02/17/17 12:14	
Boron	mg/L	<0.10	0.10	02/17/17 12:14	
Calcium	mg/L	<0.10	0.10	02/17/17 12:14	
Chromium	mg/L	< 0.0050	0.0050	02/17/17 12:14	
Lead	mg/L	< 0.0050	0.0050	02/17/17 12:14	
Lithium	mg/L	< 0.010	0.010	02/17/17 12:14	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L		0.97	97	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	0.92	92	85-115	

Calcium mg/L 10 9.7 85-115 97 Chromium mg/L 1 0.95 95 85-115 Lead mg/L 1 0.96 96 85-115 Lithium mg/L 1.0 101 85-115

MATRIX SPIKE & MATRIX SP	IKE DUPLIC	ATE: 19055	73		1905574							
			MS	MSD								
	(60237510001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.076	1	1	0.99	0.98	92	91	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	0.93	0.92	93	92	70-130	1	20	
Boron	mg/L	0.74	1	1	1.7	1.7	93	91	70-130	1	20	
Calcium	mg/L	151	10	10	159	156	82	49	70-130	2	20	M1
Chromium	mg/L	< 0.0050	1	1	0.91	0.91	91	91	70-130	0	20	
Lead	mg/L	< 0.0050	1	1	0.88	0.88	88	88	70-130	0	20	

0.98

0.97

95

70-130

MATRIX SPIKE SAMPLE:	1905575						
		60237510002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.30	1	1.2	92	70-130	
Beryllium	mg/L	< 0.0010	1	0.93	93	70-130	
Boron	ma/L	0.23	1	1.1	91	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

MATRIX SPIKE SAMPLE:	1905575						
Parameter	Units	60237510002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium		170	10	175	53	70-130	M1
Chromium	mg/L	< 0.0050	1	0.91	91	70-130	ı
Lead	mg/L	< 0.0050	1	0.88	88	70-130	ı
Lithium	mg/L	< 0.010	1	0.97	96	70-130	ı

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Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

QC Batch: 465593 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1905588 Matrix: Water
Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

Associated Lab Samples:	60237751001, 60237751002,	60237751003,	60237751004
		Diami	D = = = = = = = =

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	< 0.0010	0.0010	02/22/17 12:27	
Arsenic	mg/L	< 0.0010	0.0010	02/22/17 12:27	
Cadmium	mg/L	< 0.00050	0.00050	02/22/17 12:27	
Cobalt	mg/L	< 0.0010	0.0010	02/22/17 12:27	
Molybdenum	mg/L	< 0.0010	0.0010	02/22/17 12:27	
Selenium	mg/L	< 0.0010	0.0010	02/22/17 12:27	
Thallium	mg/L	< 0.0010	0.0010	02/22/17 12:27	

LABORATORY CON		SAMDLE.	1905589
TABURATURY CON	IKUIS	SAIVIPLE:	ายบรรชย

Date: 03/08/2017 03:00 PM

ENDOTOTION CONTINUE ON WILLE.	1000000	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.039	98	85-115	
Arsenic	mg/L	.04	0.040	99	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.039	97	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.040	100	85-115	
Thallium	mg/L	.04	0.037	93	85-115	

MATRIX SPIKE SAMPLE:	1905590						
		60237510003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.035	88	70-130	
Arsenic	mg/L	0.12	.04	0.17	110	70-130	
Cadmium	mg/L	< 0.00050	.04	0.040	99	70-130	
Cobalt	mg/L	0.013	.04	0.051	94	70-130	
Molybdenum	mg/L	0.0022	.04	0.040	94	70-130	
Selenium	mg/L	< 0.0010	.04	0.037	91	70-130	
Thallium	mg/L	< 0.0010	.04	0.038	93	70-130	

MATRIX SPIKE SAMPLE:	1905592						
		60237510004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	98	70-130	
Arsenic	mg/L	0.0017	.04	0.042	100	70-130	
Cadmium	mg/L	< 0.00050	.04	0.039	98	70-130	
Cobalt	mg/L	0.0017	.04	0.039	94	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

MATRIX SPIKE SAMPLE:	1905592						
		60237510004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Molybdenum	mg/L	0.042	.04	0.084	106	70-130	
Selenium	mg/L	< 0.0010	.04	0.039	97	70-130	
Thallium	mg/L	<0.0010	.04	0.037	91	70-130	

SAMPLE DUPLICATE: 1909305								
		60237510003	Dup	Max				
Parameter	Units	Result	Result	RPD	RPD	Qualifiers		
Antimony	mg/L	<0.0010	<0.0010		20			
Arsenic	mg/L	0.12	0.12	0	20			
Cadmium	mg/L	< 0.00050	< 0.00050		20			
Cobalt	mg/L	0.013	0.014	1	20			
Molybdenum	mg/L	0.0022	0.0022	2	20			
Selenium	mg/L	< 0.0010	< 0.0010		20			
Thallium	mg/L	< 0.0010	< 0.0010		20			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

QC Batch: 465749 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1906453 Matrix: Water
Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 02/16/17 14:39

LABORATORY CONTROL SAMPLE: 1906454

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Total Dissolved Solids mg/L 1000 967 97 80-120

SAMPLE DUPLICATE: 1906455

60237681003 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 977 0 **Total Dissolved Solids** 980 10 mg/L

SAMPLE DUPLICATE: 1906456

Date: 03/08/2017 03:00 PM

Parameter Units 60237753003 Dup Result RPD Max Result RPD Qualifiers

Total Dissolved Solids mg/L 4080 4040 1 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

QC Batch: 465302 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60237751001

SAMPLE DUPLICATE: 1904655

Date: 03/08/2017 03:00 PM

 Parameter
 Units
 60237648001 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 6.9
 6.9
 0
 5 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

QC Batch: 465627 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60237751002, 60237751003, 60237751004

SAMPLE DUPLICATE: 1905773

Date: 03/08/2017 03:00 PM

 Parameter
 Units
 Result
 Dup Result
 RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.2
 7.2
 0
 5 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

QC Batch: 465470 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1905076 Matrix: Water
Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 02/14/17 18:08

LABORATORY CONTROL SAMPLE: 1905077

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.7 107 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905078 1905079

MS MSD 60237510001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride mg/L 0.32 2.5 2.5 3.0 3.0 106 106 80-120 15

MATRIX SPIKE SAMPLE: 1905080 60237510002 Spike MS MS % Rec

ParameterUnitsResultConc.Result% RecLimitsQualifiersFluoridemg/L0.472.53.110580-120

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Chloride

Date: 03/08/2017 03:00 PM

Sulfate

QC Batch: 465543 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

60237751001, 60237751002, 60237751003, 60237751004 Associated Lab Samples:

METHOD BLANK: 1905374 Matrix: Water Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

Blank Reporting

Parameter Result Limit Qualifiers Units Analyzed <1.0 1.0 02/15/17 10:46 mg/L mg/L <1.0 1.0 02/15/17 10:46

LABORATORY CONTROL SAMPLE: 1905375

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 5.0 90-110 mg/L Sulfate mg/L 5 5.0 100 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905376 1905377

			MS	MSD								
		60237510002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	235	100	100	329	332	94	97	80-120	1	15	
Sulfate	mg/L	165	100	100	260	263	96	99	80-120	1	15	

MATRIX SPIKE SAMPLE: 1905378 60237510003 MS MS % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits

Chloride 186 100 287 101 80-120 mg/L Sulfate 122 223 102 80-120 mg/L 100

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Sample: FGD-1-020917 Lab ID: 60237751001 Collected: 02/09/17 12:12 Received: 02/11/17 09:05 Matrix: Water PWS: Site ID: Sample Type: Method Act ± Unc (MDC) Carr Trac **Parameters** Units Analyzed CAS No. Qual EPA 903.1 0.789 ± 0.552 (0.666) Radium-226 pCi/L 03/06/17 12:31 13982-63-3 C:NA T:89% EPA 904.0 $0.367 \pm 0.476 \quad (1.01)$ Radium-228 pCi/L 03/07/17 11:41 15262-20-1 C:56% T:82% Total Radium Total Radium 1.16 ± 1.03 (1.68) pCi/L 03/07/17 20:54 7440-14-4 Calculation



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Sample: FGD-2-020917 Lab ID: 60237751002 Collected: 02/09/17 13:18 Received: 02/11/17 09:05 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.0812 \pm 0.478 \quad (0.976)$ Radium-226 pCi/L 03/06/17 12:31 13982-63-3 C:NA T:89% EPA 904.0 1.06 ± 0.542 (0.938) Radium-228 pCi/L 03/07/17 11:41 15262-20-1 C:59% T:83% Total Radium Total Radium 1.14 ± 1.02 (1.91) pCi/L 03/07/17 20:54 7440-14-4 Calculation



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Sample: FGD-3-020917 Lab ID: 60237751003 Collected: 02/09/17 14:29 Received: 02/11/17 09:05 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.492 ± 0.417 (0.517) Radium-226 pCi/L 03/06/17 12:41 13982-63-3 C:NA T:89% EPA 904.0 1.04 ± 0.600 (1.08) Radium-228 pCi/L 03/07/17 11:41 15262-20-1 C:48% T:85% Total Radium Total Radium 1.53 ± 1.02 (1.60) pCi/L 03/07/17 20:54 7440-14-4 Calculation



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Sample: FGD-4-020917 Lab ID: 60237751004 Collected: 02/09/17 15:49 Received: 02/11/17 09:05 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.218 ± 0.377 (0.674) Radium-226 pCi/L 03/06/17 12:31 13982-63-3 C:NA T:92% EPA 904.0 $0.411 \pm 0.420 \quad (0.860)$ Radium-228 pCi/L 03/07/17 11:41 15262-20-1 C:59% T:78% Total Radium **Total Radium** 0.629 ± 0.797 (1.53) pCi/L 03/07/17 20:54 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

QC Batch: 250470 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1232539 Matrix: Water

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.158 ± 0.276 (0.596) C:68% T:93%
 pCi/L
 03/07/17 11:43

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

QC Batch: 250469 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

METHOD BLANK: 1232538 Matrix: Water

Associated Lab Samples: 60237751001, 60237751002, 60237751003, 60237751004

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.000 \pm 0.321 (0.654) C:NA T:91% pCi/L 03/06/17 12:09

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 03/08/2017 03:00 PM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237751

Date: 03/08/2017 03:00 PM

\$10237751002 FGD-2-020917 EPA 200.7 465590 EPA 200.7 465696 \$10237751004 FGD-4-020917 EPA 200.7 465590 EPA 200.7 465696 \$10237751004 FGD-4-020917 EPA 200.7 465590 EPA 200.7 465696 \$10237751001 FGD-1-020917 EPA 200.8 465593 EPA 200.8 465698 \$10237751003 FGD-3-020917 EPA 200.8 465593 EPA 200.8 465698 \$10237751003 FGD-3-020917 EPA 200.8 465593 EPA 200.8 465698 \$10237751004 FGD-4-020917 EPA 200.8 465593 EPA 200.8 465698 \$10237751004 FGD-4-020917 EPA 200.8 465593 EPA 200.8 465698 \$10237751005 FGD-3-020917 EPA 200.8 465593 EPA 200.8 465698 \$10237751006 FGD-1-020917 EPA 245.1 465533 EPA 200.8 465698 \$10237751007 FGD-3-020917 EPA 245.1 465533 EPA 245.1 465636 \$10237751007 FGD-3-020917 EPA 245.1 465533 EPA 245.1 465636 \$10237751008 FGD-3-020917 EPA 245.1 465533 EPA 245.1 465636 \$10237751009 FGD-3-020917 EPA 245.1 465533 EPA 245.1 465636 \$10237751000 FGD-3-020917 EPA 245.1 465533 EPA 245.1 465636 \$10237751000 FGD-3-020917 EPA 903.1 250469 \$10237751000 FGD-3-020917 EPA 904.0 250470 \$10237751000 FGD-3-020917 EPA 904.0 250470 \$10237751000 FGD-3-020917 EPA 904.0 250470 \$10237751000 FGD-3-020917 TOTAL Radium Calculation 251399 \$10237751000 FGD-3-020917 SM 4500-H+B 465502 \$10237751000 FGD-3-020917 EPA 300.0 4655749 \$10237751000 FGD-	Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
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Page	60237751003	FGD-3-020917	EPA 200.8	465593	EPA 200.8	465698
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Figure F	0237751001	FGD-1-020917	EPA 904.0	250470		
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	0237751003	FGD-3-020917	EPA 300.0	465543		
	60237751004	FGD-4-020917	EPA 300.0	465470		
	60237751004	FGD-4-020917	EPA 300.0	465543		



Sample Condition Upon Receipt



Client Name: \Nestar			
Courier: FedEx □ UPS □ VIA 🗱 Clay □ PI	EX 🗆 ECI 🗆 Pad	ce □ Xroads □ (Client □ Other □
	Shipping Label Used? `	Yes □ No □	
Custody Seal on Cooler/Box Present: Yes ₺ No □		No □	
Packing Material: Bubble Wrap □ Bubble Bags □	Foam □	None 🗹 Othe	r 🗆
Thermometer Used: (CF+1.5) CF+0.9 Type of I	Blue None		
Cooler Temperature (°C): As-read 05 Corr. Facto	CF +1.5 CF +0.9 Corrected	2.0	Date and initials of person examining contents: \(\mathcal{B} \)
Temperature should be above freezing to 6°C			ţ.i.y
Chain of Custody present:	ØYes □No □N/A		
Chain of Custody relinquished:	ÑYes □No □N/A		
Samples arrived within holding time:	ØYes □No □N/A		
Short Hold Time analyses (<72hr):	MYes No NA OH		
Rush Turn Around Time requested:	□Yes QNo □N/A		
Sufficient volume:	© Yes □No □N/A	i	
Correct containers used:	ÑaYes □No □N/A	-	
Pace containers used:	Maryes □No □N/A		
Containers intact:	Maryes □No □N/A		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No KÎN/A		
Filtered volume received for dissolved tests?	□Yes □No KIN/A		
Sample labels match COC: Date / time / ID / analyses	Kanana No □N/A		
Samples contain multiple phases? Matrix: 🎖 🏋	□Yes ÊNo □N/A		
Containers requiring pH preservation in compliance?	Maryes □No □N/A		
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)			
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks: (*N/A			
Lead acetate strip turns dark? (Record only)	□Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:	□Yes □No KQN/A		
Headspace in VOA vials (>6mm):	□Yes □No thank		
Samples from USDA Regulated Area: State:	□Yes □No ØN/A		
Additional labels attached to 5035A / TX1005 vials in the field?	□Yes □No KN/A		¥.
Client Notification/ Resolution: Copy COC to C		Field Data Required?	Y / N
Person Contacted: Date/Tir	ne:	•	Χ
Comments/ Resolution:		_	
Project Manager Review:	Date:		

By hwilson at 9:09 am, 2/13/17



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	Section B Required Proje	ect Infor	nation:					Secti Invoic	ion C e Inforr	nation:												P	age:	l	of		T
Company: WESTAR ENERGY	Report To: Br	andon	Griffin					Attent	ion:	Jar	ed Mo	orriso	on													0	
Address: 818 Kansas Ave	Copy To: Ja	red Mo	rrison, H	eath Hor	nya			Comp	any Na	me:	WES	TAR	ENE	RGY			R	REGI	JLATO	DRY	AGENO	CY		8 4			
Topeka, KS 66612								Addre	ss:		SEE	SEC	TION	A			1	<u> </u>	NPDES	T	GRO	UND V	VATE	₹ F	DRINKING	TAW	ER
Email To: brandon.l.griffin@westarenergy.com	Purchase Orde	r No,:						Pace C Refere									٦,	Γ (JST	ī	RCRA	A		Г	OTHER	_	
Phone: (785) 575-8135 Fax:	Project Name:	JEC	CCR Gr	oundwate	er			Pace F Manag	roject	Hea	ather	Wils	on, 91	3-563	-1407	7		Site	Locatio	on			P			/////	
Requested Due Date/TAT: 7 DAY	Project Numbe	r.				_			Profile #:	965	7, 1						1		STATI	E:	K	S	_				
				_				_					_		Rec	uest	ed A	naly	sis Fill	tere	d (Y/N)	7151	V///				
Section D Valid Matrix Co	odes 6	6												N /		П	П										
Required Client Information MATRIX DRINKING WATER	CODE G	C=COMP)		COLL	ECTED		z		<u> </u>	Pres	serva	tives		7	+	+	+	+	++	+	++	+-	7///				
WATER WASTE WATER PRODUCT SOIL/SOUD OIL WIPE AIR (A-Z, 0-91,-) OTHER	AR LL COT TS	TYPE (G	COMPO		COMPC END/G	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	HNO ₃	HCI	Na ₂ S ₂ O ₃	Methanol Other	↓Analysis Test↓	200.7 Total Metals*	Total	300.0 Cl, Fl, SO4	4500 H+B	Radium 226	Radium 228			Residual Chlorine (Y/N)	Pace	377	lo./ L	ab I.D.
1 FGD-1-020917		76			2/9	1212		4	1	3													П	BA7.6 6	10IN 200	BP2N'	001
2 FGD-2-020917		16			2/0	1318	F	4	iit	3	T	1		11	T				11	7			П	1	1	d	002
3 FGO-3-020917		T 6			2/9	1429		4	il	3				1												Ī	003
4 FGD-4-020917		TG			2/9	1549		u	ii	3		T		231										4	4	4	ouy
5				10.7				1																-			
6							E.	l' :						32													
7														131													
8													4														
9				4								Т						1									
10														12									П				
11																											
12							H							7 1													
ADDITIONAL COMMENTS	R	ELINQU	ISHED BY	AFFILIAT	ION	DATI		1	IME			AC	CEPTE	D BY /	AFFIL	ATION	V		DATE		TIME			SAMP	LE CONDIT	IONS	
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	18	15	/11	ectev	/	2/10/	17	12	W			0	8		/	1.		1	2/11/	17	0405	12.	.0	4	У	(/
**200,8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	'		7				1	10			0	1			<i>\pu</i>						-100						
P ag Ge												_						1							D		75
je 37				SAMPL		AND SIGN		_	2	~	/				_	LEE	Ti -					4	ပ္	uo pa	Seale (Y/N)		Intac 1)
7 of 39						me of SAMF		-	30	37	/	BI	and	27	DATI (MM	E Cian	and	2/	10/1	7			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)

Chain of Custody

WO#:30210710





Workorder Name: JEC CCR GROUNDWATER Workorder: 60237751 Owner Received Date: 2/11/2017 Results Requested By: 3/7/2017 Report To Subcontract To Requested Analysis Heather Wilson Pace Analytical Pittsburgh Pace Analytical Kansas 1638 Roseytown Road 9608 Loiret Blvd. Suites 2.3. & 4 Lenexa, KS 66219 Greensburg, PA 15601 Radlum-226 + Total Sum Radlum Phone (913)599-5665 Phone (724)850-5600 Preserved Containers HN03 Sample Collect Sample ID Date/Time Туре Lab ID Matrix LAB USE ONLY FGD-1-020917 PS 2/9/2017 12:12 60237751001 Water 2 Χ Х FGD-2-020917 PS 2 2/9/2017 13:18 60237751002 Water X Χ 3 FGD-3-020917 PS 2/9/2017 14:29 60237751003 Water 2 Χ Х FGD-4-020917 PS 2/9/2017 15:49 60237751004 2 Water X Χ Comments Transfers Released By Date/Time Received By Date/Time 2121,7 200 2-14-17 10:130 2 W or N Cooler Temperature on Receipt 11/4°C **Custody Seal** Received on Ice Y or /N/ Samples Intact (Y) or N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh

BLM

				3021071
Pace Analytical Client Nam	ie:	P	ac	<u> Kansas</u> Project#
		,		
Courier: Fed Ex UPS USPS Tracking #: 7044 6654	」Client L Sスラミ	」Com	mercia	al
	Żyes □	no	Sea	ls intact: yes no
Thermometer Used	Туре	of Ice	: W	et Blue (None
Cooler Temperature Observed Temp	NA	° C	Cor	rection Factor: °C Final Temp: °C
Temp should be above freezing to 6°C				
Commenter	[Ve	- IAI-	LAL	Date and Initials of person examining contents: <u>RLM マーリー</u> プ
Chain of Custody Dresents	Yes	No	N/A	
Chain of Custody Present:		1	-	1.
Chain of Custody Filled Out:		4	+	2.
Chain of Custody Relinquished:		+	1-	3.
Sampler Name & Signature on COC:		4	-	4.
Sample Labels match COC:		.)		5.
-Includes date/time/ID Matri:	x:`	YT_	T	
Samples Arrived within Hold Time:		+-	-	6.
Short Hold Time Analysis (<72hr remainin	g):	+	1	7.
Rush Turn Around Time Requested:	-+			8.
Sufficient Volume:	-+	1-		9.
Correct Containers Used:	- /	1		10.
-Pace Containers Used:		1	-	
Containers Intact:				11.
Orthophosphate field filtered			1	12.
Organic Samples checked for dechlorina	tion:		//	13.
Filtered volume received for Dissolved tests All containers have been checked for preservation				14.
·				15. Ph/2
All containers needing preservation are found to be compliance with EPA recommendation.	in /			
•				Initial when RI AA Date/time of
exceptions: VOA, coliform, TOC, O&G, Pher	nolics			completed DV/V preservation
				Lot # of added preservative
leadspace in VOA Vials (>6mm):			1,	16.
rip Blank Present:			//	17.
rip Blank Custody Seals Present			_	
Rad Aqueous Samples Screened > 0.5 mre	m/hr			Initial when completed: Repair Date: 2 14-17
Client Notification/ Resolution:			2200 10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Person Contacted:			Date/1	Time: Contacted By:
Comments/ Resolution:				
Mary and the selection of the selection				

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 1-6
April 2017 Sampling Event
Laboratory Analytical Report





May 02, 2017

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Danson Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY







CERTIFICATIONS

JEC CCR GROUNDWATER Project:

Pace Project No.: 60241636

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133 Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60241636001	FGD-1-040717	Water	04/07/17 12:53	04/08/17 09:00
60241636002	FGD-2-040717	Water	04/07/17 13:59	04/08/17 09:00
60241636003	FGD-3-040717	Water	04/07/17 14:59	04/08/17 09:00
60241636004	FGD-4-040717	Water	04/07/17 16:14	04/08/17 09:00
60241636005	DUP-040717	Water	04/07/17 08:00	04/08/17 09:00



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60241636001	FGD-1-040717	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0241636002	FGD-2-040717	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0241636003	FGD-3-040717	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0241636004	FGD-4-040717	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0241636005	DUP-040717	EPA 200.7	JGP	7	PASI-K



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: May 02, 2017

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: May 02, 2017

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: May 02, 2017

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** May 02, 2017

General Information:

5 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:May 02, 2017

General Information:

5 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:May 02, 2017

General Information:

5 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: May 02, 2017

General Information:

5 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: May 02, 2017

General Information:

5 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- DUP-040717 (Lab ID: 60241636005)
- FGD-1-040717 (Lab ID: 60241636001)
- FGD-2-040717 (Lab ID: 60241636002)
- FGD-3-040717 (Lab ID: 60241636003)
- FGD-4-040717 (Lab ID: 60241636004)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: May 02, 2017

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Sample: FGD-1-040717	Lab ID: 602	241636001	Collected: 04/07/1	7 12:53	Received: 04	/08/17 09:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	thod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.31	mg/L	0.0050	1	04/21/17 11:35	04/24/17 13:54	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 13:54	7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1		04/24/17 13:54		
Calcium, Total Recoverable	98.2	mg/L	0.10	1		04/24/17 13:54		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 13:54	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 13:54		
_ithium	0.011	mg/L	0.010	1	04/21/17 11:35	04/24/17 13:54	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:25	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:25	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 09:25	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:25	7440-48-4	
Molybdenum, Total Recoverable	0.0014	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:25	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:25	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:25	7440-28-0	
245.1 Mercury	Analytical Met	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/10/17 15:45	04/11/17 10:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	oc					
Total Dissolved Solids	524	mg/L	5.0	1		04/12/17 14:51		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500	D-H+B					
pH at 25 Degrees C	7.2	Std. Units	0.10	1		04/11/17 13:53		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	0.0					
Chloride	63.9	mg/L	10.0	10		04/11/17 01:26	16887-00-6	
Fluoride	0.34	mg/L	0.20	1		04/11/17 01:11	16984-48-8	
Sulfate	85.5	mg/L	10.0	10		04/11/17 01:26	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Sample: FGD-2-040717	Lab ID: 602	41636002	Collected: 04/07/1	7 13:59	Received: 04	/08/17 09:00 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.089	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:05	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:05	7440-41-7	
Boron, Total Recoverable	0.22	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:05	7440-42-8	
Calcium, Total Recoverable	150	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:05	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35			
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:05	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:05	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:29	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:29	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 09:29	7440-43-9	
Cobalt, Total Recoverable	0.0016	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:29	7440-48-4	
Molybdenum, Total Recoverable	0.0041	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:29	7439-98-7	
Selenium, Total Recoverable	0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:29	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:29	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/10/17 15:45	04/11/17 10:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	745	mg/L	5.0	1		04/13/17 12:41		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	7.2	Std. Units	0.10	1		04/11/17 13:56	i	H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	34.0	mg/L	2.0	2		04/11/17 02:40	16887-00-6	
Fluoride	0.36	mg/L	0.20	1		04/11/17 02:25	16984-48-8	
Sulfate	263	mg/L	20.0	20		04/11/17 01:41	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Sample: FGD-3-040717	Lab ID: 6024	11636003	Collected: 04/07/1	7 14:59	Received: 04	/08/17 09:00 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Meth	od: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.13	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:12	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:12	7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:12	7440-42-8	
Calcium, Total Recoverable	135	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:12	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:12	2 7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:12	7439-92-1	
_ithium	0.013	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:12	7439-93-2	
200.8 MET ICPMS	Analytical Meth	od: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:33	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:33	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 09:33	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:33	7440-48-4	
Molybdenum, Total Recoverable	0.0058	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:33	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:33	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:33	7440-28-0	
245.1 Mercury	Analytical Meth	od: EPA 24	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/10/17 15:45	04/11/17 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Meth	od: SM 254	0C					
Total Dissolved Solids	716	mg/L	5.0	1		04/13/17 12:42	2	
4500H+ pH, Electrometric	Analytical Meth	od: SM 450	0-H+B					
oH at 25 Degrees C	7.0	Std. Units	0.10	1		04/11/17 13:58	;	H6
800.0 IC Anions 28 Days	Analytical Meth	od: EPA 300	0.0					
Chloride	44.2	mg/L	5.0	5		04/11/17 03:10	16887-00-6	
Fluoride	0.31	mg/L	0.20	1		04/11/17 02:55	16984-48-8	
Sulfate	206	mg/L	50.0	50		04/11/17 03:25	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Sample: FGD-4-040717	Lab ID: 602	241636004	Collected: 04/07/1	7 16:14	Received: 04	I/08/17 09:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.054	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:16	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:16	7440-41-7	
Boron, Total Recoverable	0.25	mg/L	0.10	1		04/24/17 14:16		
Calcium, Total Recoverable	180	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:16	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:16	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:16		
_ithium	0.012	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:16	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:44	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:44	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 09:44	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:44	7440-48-4	
Molybdenum, Total Recoverable	0.0039	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:44	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:44	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 09:44	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/10/17 15:45	04/11/17 10:25	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	1070	mg/L	5.0	1		04/13/17 12:43		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		04/11/17 13:59		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	82.3	mg/L	10.0	10		04/11/17 03:55	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		04/11/17 03:40	16984-48-8	
Sulfate	377	mg/L	50.0	50		04/11/17 04:10	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Sample: DUP-040717	Lab ID: 602	241636005	Collected: 04/07/1	7 08:00	Received: 04	I/08/17 09:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.31	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:27	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:27	7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1		04/24/17 14:27		
Calcium, Total Recoverable	96.6	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:27	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:27	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:27		
Lithium	0.011	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:27	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:03	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:03	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:03	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:03	7440-48-4	
Molybdenum, Total Recoverable	0.0014	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:03	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:03	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:03	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/10/17 15:45	04/11/17 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	oc					
Total Dissolved Solids	537	mg/L	5.0	1		04/13/17 12:44		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	7.3	Std. Units	0.10	1		04/13/17 14:10		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	63.4	mg/L	10.0	10		04/11/17 04:25	16887-00-6	
Fluoride	0.34	mg/L	0.20	1		04/11/17 05:24	16984-48-8	
Sulfate	84.4	mg/L	10.0	10		04/11/17 04:25	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

 QC Batch:
 472110
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1933355 Matrix: Water

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

Blank Reporting

 Parameter
 Units
 Result
 Limit
 Analyzed
 Qualifiers

 Mercury
 mg/L
 <0.00020</td>
 0.00020
 04/11/17 09:25

LABORATORY CONTROL SAMPLE: 1933356

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0046 92 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1933357 1933358

MS MSD 60241514001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0047 70-130 3 20 Mercury mg/L .005 .005 0.0046 92 94

MATRIX SPIKE SAMPLE: 1933359 60241514003 Spike MS MS % Rec

ParameterUnitsResultConc.Result% RecLimitsQualifiersMercurymg/LND.0050.00499870-130

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

QC Batch: 473694 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1939836 Matrix: Water

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	04/24/17 13:51	
Beryllium	mg/L	< 0.0010	0.0010	04/24/17 13:51	
Boron	mg/L	<0.10	0.10	04/24/17 13:51	
Calcium	mg/L	<0.10	0.10	04/24/17 13:51	
Chromium	mg/L	< 0.0050	0.0050	04/24/17 13:51	
Lead	mg/L	< 0.0050	0.0050	04/24/17 13:51	
Lithium	mg/L	< 0.010	0.010	04/24/17 13:51	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.0	103	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	10.3	103	85-115	
Chromium	mg/L	1	1.0	103	85-115	
Lead	mg/L	1	1.1	107	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 19398	40		1939841							
Parameter	6 Units	0241636001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.31	1	1	1.3	1.3	102	102	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	1.0	102	101	70-130	1	20	
Boron	mg/L	<0.10	1	1	1.1	1.1	104	102	70-130	1	20	
Calcium	mg/L	98.2	10	10	106	105	83	71	70-130	1	20	
Chromium	mg/L	< 0.0050	1	1	1.0	1.0	102	101	70-130	1	20	
Lead	mg/L	< 0.0050	1	1	1.0	1.0	102	102	70-130	1	20	
Lithium	mg/L	0.011	1	1	1.0	1.0	102	101	70-130	1	20	

MATRIX SPIKE SAMPLE:	1939842						
		60241636002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.089	1	1.1	103	70-130	
Beryllium	mg/L	< 0.0010	1	1.0	101	70-130	
Boron	mg/L	0.22	1	1.3	104	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

MATRIX SPIKE SAMPLE:	1939842						
Parameter	Units	60241636002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium		150	10	160	96	70-130	
Chromium	mg/L	< 0.0050	1	1.0	103	70-130	
Lead	mg/L	< 0.0050	1	1.0	103	70-130	
Lithium	mg/L	< 0.010	1	1.0	102	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

 QC Batch:
 473696
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1939849 Matrix: Water

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	04/28/17 09:17	
Arsenic	mg/L	< 0.0010	0.0010	04/28/17 09:17	
Cadmium	mg/L	< 0.00050	0.00050	04/28/17 09:17	
Cobalt	mg/L	< 0.0010	0.0010	04/28/17 09:17	
Molybdenum	mg/L	< 0.0010	0.0010	04/28/17 09:17	
Selenium	mg/L	< 0.0010	0.0010	04/28/17 09:17	
Thallium	mg/L	< 0.0010	0.0010	04/28/17 09:17	

LABORATORY CONTROL SAMPLE:	1939851					
Doromotor	Units	Spike	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Parameter	Units	Conc	Result	% Rec	LIMIUS	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.037	93	85-115	
Cadmium	mg/L	.04	0.039	97	85-115	
Cobalt	mg/L	.04	0.040	100	85-115	
Molybdenum	mg/L	.04	0.042	106	85-115	
Selenium	mg/L	.04	0.035	88	85-115	
Thallium	mg/L	.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 19398	52 MS	MSD	1939853							
Parameter	6 Units	0241636003 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	 mg/L	<0.0010	.04	.04	0.038	0.038	96	95	70-130	1	20	
Arsenic	mg/L	< 0.0010	.04	.04	0.037	0.037	92	90	70-130	3	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.037	0.036	92	90	70-130	2	20	
Cobalt	mg/L	< 0.0010	.04	.04	0.038	0.037	94	93	70-130	1	20	
Molybdenum	mg/L	0.0058	.04	.04	0.048	0.048	106	104	70-130	2	20	
Selenium	mg/L	< 0.0010	.04	.04	0.034	0.034	86	84	70-130	3	20	
Thallium	mg/L	< 0.0010	.04	.04	0.042	0.041	106	103	70-130	2	20	

MATRIX SPIKE SAMPLE:	1939854						
		60241636004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.038	95	70-130	
Arsenic	mg/L	< 0.0010	.04	0.036	90	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	89	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

MATRIX SPIKE SAMPLE:	1939854						
Doromotor	Units	60241636004 Result	Spike	MS Popult	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units	Result	Conc.	Result	% Kec	Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.037	92	70-130	
Molybdenum	mg/L	0.0039	.04	0.045	103	70-130	
Selenium	mg/L	< 0.0010	.04	0.034	84	70-130	
Thallium	mg/L	< 0.0010	.04	0.042	106	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

QC Batch: 472460 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60241636001

METHOD BLANK: 1934622 Matrix: Water

Associated Lab Samples: 60241636001

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 04/12/17 14:36

LABORATORY CONTROL SAMPLE: 1934623

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 989 99 80-120

SAMPLE DUPLICATE: 1934624

60241616004 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1500 10 **Total Dissolved Solids** 1490 1 mg/L

SAMPLE DUPLICATE: 1934625

Date: 05/02/2017 04:38 PM

60241652009 Dup Max RPD RPD Parameter Units Result Result Qualifiers 1270 **Total Dissolved Solids** mg/L 1310 3 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

QC Batch: 472660 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1935328 Matrix: Water
Associated Lab Samples: 60241636002, 60241636003, 60241636004, 60241636005

60241636002, 60241636003, 60241636004, 60241636005 Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 04/13/17 12:38

LABORATORY CONTROL SAMPLE: 1935329

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 998 100 80-120

SAMPLE DUPLICATE: 1935330

60241131007 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1670 2 10 H3 **Total Dissolved Solids** 1710 mg/L

SAMPLE DUPLICATE: 1935331

Date: 05/02/2017 04:38 PM

Parameter Units 60241741002 Dup Result RPD Max Result RPD Qualifiers

Total Dissolved Solids mg/L 204 207 1 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

QC Batch: 472271 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004

SAMPLE DUPLICATE: 1933836

Date: 05/02/2017 04:38 PM

 Parameter
 Units
 60241636001 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.2
 7.3
 0
 5 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

QC Batch: 472465 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60241636005

SAMPLE DUPLICATE: 1934649

Date: 05/02/2017 04:38 PM

60241548001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 8.3 pH at 25 Degrees C 5 H6 Std. Units 8.3 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

 QC Batch:
 472089
 Analysis Method:
 EPA 300.0

 QC Batch Method:
 EPA 300.0
 Analysis Description:
 300.0 IC Anions

 Associated Lab Samples:
 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1933304 Matrix: Water

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

Blank Reporting Parameter Result Limit Qualifiers Units Analyzed Chloride <1.0 04/10/17 16:29 mg/L 1.0 Fluoride mg/L < 0.20 0.20 04/10/17 16:29 04/10/17 16:29 Sulfate mg/L <1.0 1.0

LABORATORY CONTROL SAMPLE: 1933305 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 5 4.7 94 90-110 Fluoride 2.5 2.5 99 mg/L 90-110 Sulfate 5 5.0 100 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1933306 1933307 MS MSD 60241580003 MS MSD MS MSD % Rec Spike Spike Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec RPD RPD Qual Limits Chloride mg/L 185 50 50 233 229 97 89 80-120 2 15 Fluoride ND 25 25 25.9 25.6 100 99 80-120 15 mg/L 1 Sulfate 106 80-120 mg/L 50 50 155 152 98 91 2 15

MATRIX SPIKE SAMPLE:	1933308						
Parameter	Units	60241581003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	36.7	50	83.2	93	80-120	
Fluoride	mg/L	ND	25	25.0	97	80-120	
Sulfate	mg/L	109	50	160	101	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Sample: FGD-1-040717 PWS:	Lab ID: 6024163 Site ID:	36001 Collected: 04/07/17 12:53 Sample Type:	Received:	04/08/17 09:00	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.707 ± 0.594 (0.849) C:NA T:90%	pCi/L	04/26/17 22:42	13982-63-3	
Radium-228	EPA 904.0	0.240 ± 0.374 (0.810) C:78% T:76%	pCi/L	04/26/17 14:06	5 15262-20-1	
Total Radium	Total Radium Calculation	0.947 ± 0.968 (1.66)	pCi/L	05/02/17 16:13	3 7440-14-4	



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60241636

Sample: FGD-2-040717 Lab ID: 60241636002 Collected: 04/07/17 13:59 Received: 04/08/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.751 ± 0.473 (0.203) Radium-226 pCi/L 04/26/17 22:42 13982-63-3 C:NA T:89% EPA 904.0 $0.150 \pm 0.367 \quad (0.818)$ Radium-228 pCi/L 04/26/17 14:06 15262-20-1 C:76% T:77% Total Radium **Total Radium** 0.901 ± 0.840 (1.02) pCi/L 05/02/17 16:13 7440-14-4



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60241636

Sample: FGD-3-040717 Lab ID: 60241636003 Collected: 04/07/17 14:59 Received: 04/08/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.000 \pm 0.343 \quad (0.769)$ Radium-226 pCi/L 04/26/17 22:42 13982-63-3 C:NA T:92% EPA 904.0 $0.375 \pm 0.377 \quad (0.779)$ Radium-228 pCi/L 04/26/17 14:06 15262-20-1 C:75% T:81% Total Radium **Total Radium** $0.375 \pm 0.720 \quad (1.55)$ pCi/L 05/02/17 16:13 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Sample: FGD-4-040717 Lab ID: 60241636004 Collected: 04/07/17 16:14 Received: 04/08/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.445 \pm 0.360 \quad (0.201)$ Radium-226 pCi/L 04/26/17 22:42 13982-63-3 C:NA T:88% EPA 904.0 $0.446 \pm 0.470 \quad (0.984)$ Radium-228 pCi/L 04/26/17 14:06 15262-20-1 C:75% T:79% Total Radium **Total Radium** $0.891 \pm 0.830 (1.19)$ pCi/L 05/02/17 16:13 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Sample: DUP-040717 Lab ID: 60241636005 Collected: 04/07/17 08:00 Received: 04/08/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.860 \pm 0.535 \quad (0.527)$ Radium-226 pCi/L 04/26/17 22:42 13982-63-3 C:NA T:86% EPA 904.0 $0.468 \pm 0.373 \quad (0.737)$ Radium-228 pCi/L 04/26/17 14:06 15262-20-1 C:77% T:80% Total Radium **Total Radium** 1.33 ± 0.908 (1.26) pCi/L 05/02/17 16:13 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

 QC Batch:
 255838
 Analysis Method:
 EPA 904.0

 QC Batch Method:
 EPA 904.0
 Analysis Description:
 904.0 Radium 228

 Associated Lab Samples:
 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1260016 Matrix: Water

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.0469 ± 0.371 (0.853) C:76% T:73%
 pCi/L
 04/26/17 14:05

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

QC Batch: 255837 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

METHOD BLANK: 1260015 Matrix: Water

Associated Lab Samples: 60241636001, 60241636002, 60241636003, 60241636004, 60241636005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 0.0674 ± 0.308 (0.626) C:NA T:93%
 pCi/L
 04/26/17 22:42

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 05/02/2017 04:38 PM

H3 Sample was received or analysis requested beyond the recognized method holding time.

H6 Analysis initiated outside of the 15 minute EPA required holding time.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60241636001	FGD-1-040717	EPA 200.7	473694	EPA 200.7	473746
60241636002	FGD-2-040717	EPA 200.7	473694	EPA 200.7	473746
0241636003	FGD-3-040717	EPA 200.7	473694	EPA 200.7	473746
0241636004	FGD-4-040717	EPA 200.7	473694	EPA 200.7	473746
0241636005	DUP-040717	EPA 200.7	473694	EPA 200.7	473746
0241636001	FGD-1-040717	EPA 200.8	473696	EPA 200.8	473747
0241636002	FGD-2-040717	EPA 200.8	473696	EPA 200.8	473747
0241636003	FGD-3-040717	EPA 200.8	473696	EPA 200.8	473747
0241636004	FGD-4-040717	EPA 200.8	473696	EPA 200.8	473747
0241636005	DUP-040717	EPA 200.8	473696	EPA 200.8	473747
0241636001	FGD-1-040717	EPA 245.1	472110	EPA 245.1	472162
0241636002	FGD-2-040717	EPA 245.1	472110	EPA 245.1	472162
0241636003	FGD-3-040717	EPA 245.1	472110	EPA 245.1	472162
0241636004	FGD-4-040717	EPA 245.1	472110	EPA 245.1	472162
0241636005	DUP-040717	EPA 245.1	472110	EPA 245.1	472162
0241636001	FGD-1-040717	EPA 903.1	255837		
0241636002	FGD-2-040717	EPA 903.1	255837		
0241636003	FGD-3-040717	EPA 903.1	255837		
0241636004	FGD-4-040717	EPA 903.1	255837		
0241636005	DUP-040717	EPA 903.1	255837		
0241636001	FGD-1-040717	EPA 904.0	255838		
0241636002	FGD-2-040717	EPA 904.0	255838		
0241636003	FGD-3-040717	EPA 904.0	255838		
0241636004	FGD-4-040717	EPA 904.0	255838		
0241636005	DUP-040717	EPA 904.0	255838		
0241636001	FGD-1-040717	Total Radium Calculation	257201		
0241636002	FGD-2-040717	Total Radium Calculation	257201		
0241636003	FGD-3-040717	Total Radium Calculation	257201		
0241636004	FGD-4-040717	Total Radium Calculation	257201		
0241636005	DUP-040717	Total Radium Calculation	257201		
0241636001	FGD-1-040717	SM 2540C	472460		
0241636002	FGD-2-040717	SM 2540C	472660		
0241636003	FGD-3-040717	SM 2540C	472660		
0241636004	FGD-4-040717	SM 2540C	472660		
0241636005	DUP-040717	SM 2540C	472660		
0241636001	FGD-1-040717	SM 4500-H+B	472271		
0241636002	FGD-2-040717	SM 4500-H+B	472271		
0241636003	FGD-3-040717	SM 4500-H+B	472271		
0241636004	FGD-4-040717	SM 4500-H+B	472271		
0241636005	DUP-040717	SM 4500-H+B	472465		
0241636001	FGD-1-040717	EPA 300.0	472089		
0241636002	FGD-2-040717	EPA 300.0	472089		
0241636003	FGD-3-040717	EPA 300.0	472089		
0241636004	FGD-4-040717	EPA 300.0	472089		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60241636

Date: 05/02/2017 04:38 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60241636005	DUP-040717	EPA 300.0	472089		



Sample Condition Upon Receipt



How

PEX 🗆 ECI 🗆	Pace □ Xroads □ Client □ Other □
e Shipping Label Used	d? Yes □ No □
Seals intact: Yes 🗷	1 No □
l Foam □	None ᠒ Other □
Ice: (Wet) Blue Nor	
CF +1.5 CF +0.9 Correct	Date and initials of person examining contents: 15 4 17
	M*A.50°
Mayes □No □N/A	
Maryes □No □N/A	
MAYes □No □N/A	
MYes MINo □N/A	pt
□Yes KΩNo □N/A	
Ø Yes □No □N/A	
∭TYes □No □N/A	
KÓYes □No □N/A	
MÉYes □No □N/A	
□Yes □No □N/A	
□Yes □No DMAN/A	
MÉYes □No □N/A	
□Yes [VNo □N/A	
KŽÍYes □No □N/A	
□Yes □No	
□Yes □No	
□Yes □No LLIN/A	
□Yes □No L□N/A	
□Yes □No 🏝N/A	
Yes □No KŪN/A	
Client? Y / N	Field Data Required? Y / N
ime:	
Date	e: 416/17
	Seals intact: Yes Seals intact



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Infor	rmation:	Section B Required Proj	ject Inform	nation:						ion C ce Info	mation	1:												Pa	age:	l	of	1_	
	STAR ENERGY	Report To: B	randon	Griffin					Attent	tion:	Ja	red N	1orris	on					1										
Address: 818	Kansas Ave	Copy To: Ja	ared Mo	orrison, H	eath Hor	nya			Comp	any N	ame:	WE:	STAF	RENE	RGY				RE	GUL	ATO	RY A	GENC	Υ		11.15			
Тор	eka, KS 66612								Addre	ess:		SEE	SEC	TION	Α				F	NF	DES	Г	GROU	ND W	VATE	R F	DRINKIN	IG WA	TER
Email To: bran	ndon.l.griffin@westarenergy.com	Purchase Ord	er No.:						Pace C										1-	US	ST.		RCRA				OTHER	-	
Phone: (785) 57:	5-8135 Fax:	Project Name:	JEC	CCR Gr	oundwate	er			2.301-1-	Project	Не	eathe	r Wil:	son, 91	3-56	3-14	07		Si	ite L	ocatio	n							
Requested Due Dat	te/TAT: 7 DAY	Project Number	er.					_		Profile a	#: 96	57, 1	_		_					5	STATE		KS	S 	- 1				
	-4-	1						7	-							R	eque	ested	Ana	lysi	s Filte	ered	(Y/N)						
Section D	Valid Matrix (Codes	€ n					П		Π	_	eserv			NIA	П	T		Π					П					
s	MATRIX DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL (A-Z, 0-9 / ,-) DI DIS MUST BE UNIQUE MATRIX DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL TISSUE	AD	CODE (see valid codes to left) TYPE (G=GRAB C=COMP)	COMP	OSITE	COMPO END/GI	SITE	TEMP AT COLLECTION	CONTAINERS	erved					Test	Total Metals*	Total Metals**	245.1 Total Mercury		TDS	1 226	077			Residual Chlorine (Y/N)	bor	1/63	6	
ITEM #			MATRIX CODE SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE	# OF CC	Unpreserved	H ₂ SO₄ HNO₃	IQI	NaOH Na ₂ S ₂ C	Methanol	Analysis	Z00.7 J	200.8 1	245.1 Total	4500 H+B	2540C TDS	Radium 226	la diam			Residu	Pace	Project	No./	Lab I.D.
	0-1-040717		46	DATE	TIVIL	4/7	1253	1	4	1	3					1	-			1,4				П		Ellen Bl) BPM	
1 FG	FG0-2-04071	7 ~	TG			4/7	1359	1	4	Ħ	3		\top																wi
3	FGD-2-04071 FGD-3-040 FGD-4-040	יור	16			4/7	1459		4	1					1										Ц				63
4	FGD-4-04	0717	16			4/7	1614		4		3														Ш	\	+	+	wy
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6															9										Ц				
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8												Ш						_	\perp	1		+	1	-	Н			_	005
9	DUP-040717		46			4/7	0870		4	111			4	\perp		L		1	\perp	1		_	11	\perp	Н	+	+	+	
10												Ш	_	\perp		L		4	\perp	1		+		\vdash	Н				
11												\sqcup	_					4	\perp	1	\vdash	+	1	\perp	Н				
12										Ш		Ш		Ш					_	-		+		+	Ш				
	ADDITIONAL COMMENTS		RELINQU	ISHED BY			DAT	E	-	TIME		1	A	CCEPT	ED BY		1	TION			DATE		TIME	_		SAMP	LE COND	ITIONS	
	: Ba, Be, B, Ca, Cr, Pb, Li s: Co, As, Se, Mo, Cd, Sb, Tl	1	7	21	west	W	4/7/	17	17	700			J	J13		_/	le			4	8/17	F .	J 900	3	,5	y	<u> </u>		y
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1 of 43						PRINT Na		_	+	far of	11	7	21	iffi	N	D	ATE S	Signed	DL	+/1	77/	17		+ ;	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)
ω								-		1	8	1	_			1_0	AT IAIT D	Ditt):		1	6/	11						-	

Chain of Custody

WO#:30215757





*******************************	rkorder: 60241636	Workorder	Name:JEC CC		/ATER	****	Own	er Recei	ived	Date:	4/8/2017		Requested By	r: 5/2/2017
Rep	ort To		Subcontra	ict To	GOOD BRAN	Para la			1000	HERONIN	Requeste	d Analysis		
Pac 960 Len	ther Wilson e Analytical Kansas 3 Loiret Blvd. exa, KS 66219 ne 1(913)563-1407		1638 Suite Gree	Analytical Pittsk Roseytown Roa s 2,3, & 4 nsburg, PA 156 e (724)850-5600	ad 01				226 & Total Sum	adium-228				
	7				*****	Pres	served Con	tainers	i ii	Ra				
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HN03			Radium					LAB USE ONLY
1	FGD-1-040717	PS	4/7/2017 12:53	60241636001	Water	2			X	X		$\dagger \dagger \dagger \dagger \dagger$		001
2	FGD-2-040717	PS	4/7/2017 13:59	60241636002	Water	2			Х	X				002
3	FGD-3-040717	PS	4/7/2017 14:59	60241636003	Water	2			X	X				003
4	FGD-4-040717	PS	4/7/2017 16:14	60241636004	Water	2			X	X				004
5	DUP-040717	PS	4/7/2017 08:00	60241636005	Water	2			X	X				<i>c</i> 05
GHA.												Comr	nents	
Tran	sfers Released By	72	Date/Time	Received E				Date/Tim						
2	- My Sh	Ha-	A/6/14	400 Kluze	u Hii	/		4/11/17	1 09	40				
3										-				
Coc	ler Temperature on R	eceipt NA	°C Cu	stody Seal `	Y or (N	D	Rec	l eived or	ılce	Υo	r 🕦	Sam	ples Intact 🤇	Oor N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh

V 60
V
~ <i>_</i> ^

Pace Analytical C	lient Name:		Pal	e k	Consas	Project # 30 2 1 5 7
Courier: 17 Fed Ex 17 UF	PS∏USPS∏ Clien	t 🗆	Comm	ercial	☐ Pace Other	
Courier: 💋 Fed Ex 🗌 UF Tracking #: 7285 6	591 4130, 72	85	656	114	287	
Custody Seal on Cooler/Bo	ox Present: 🔎 yes		no	Seals	intact: yes	no
Thermometer Used	NA	Туре	of Ice:		Blue None	A
Cooler Temperature Ob	oserved Temp <u>N</u>	<u>14</u>	°C	Corre	ection Factor <u>: </u>	C Final Temp: NA °C
Temp should be above freezing	to 6°C					Date and Initials of person examining
	,		NI.	LAUA	1	Date and Initials of person examining contents:
Comments:	<u> </u>	Yes	No	N/A		
Chain of Custody Present:		/			1.	
Chain of Custody Filled Out:					2.	
Chain of Custody Relinguish	ed:	/			3.	
Sampler Name & Signature	on COC:	-			4.	
Sample Labels match COC:				<u> </u>	5.	
-Includes date/time/ID	Matrix: W+		I	-		
Samples Arrived within Hold	Time:				6.	
Short Hold Time Analysis ((<72hr remaining):				7.	
Rush Turn Around Time R	equested:				8.	
Sufficient Volume:					9.	
Correct Containers Used:		/			10.	
-Pace Containers Used:						
Containers Intact:		/			11.	
Orthophosphate field filtered				/	12.	the state of the s
Organic Samples checked	d for dechlorination:				13.	
Filtered volume received for	Dissolved tests				14.	
All containers have been check	ed for preservation.			<u> </u>	15. pH22	
All containers needing preserval compliance with EPA recommer	tion are found to be in					
·					Initial when the completed	Date/time of preservation
exceptions: VOA, coliform,	TOC, O&G, Phenolics				Lot # of added	preservation
		.			preservative	
Headspace in VOA Vials (>	6mm):				16.	The state of the s
Trip Blank Present:			_		17.	
Trip Blank Custody Seals Pr	resent					
Rad Aqueous Samples Sc	reened > 0.5 mrem/hr				Initial when KH	Date: 4/11/17
Client Notification/ Resolu	tion:					
Person Contacted:				Date/	Time:	Contacted By:
Comments/ Resolution:						
			-			
A check in this ha	x indicates that add	itiona	l info	rmatic	n has been store	ed in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 1-7
May 2017 Sampling Event
Laboratory Analytical Report





June 19, 2017

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on May 27, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Danson Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification Idaho Certification

Illinois Certification

Indiana Certification lowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051 New Mexico Certification #: PA01457 New York/TNI Certification #: 10888

North Carolina Certification #: 42706 North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification
Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5 USDA Soil Permit #: P330-14-00213 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification

Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60245292001	FGD-1-052617	Water	05/26/17 13:11	05/27/17 08:50
60245292002	FGD-2-052617	Water	05/26/17 13:58	05/27/17 08:50
60245292003	FGD-3-052617	Water	05/26/17 14:42	05/27/17 08:50
60245292004	FGD-4-052617	Water	05/26/17 15:47	05/27/17 08:50



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60245292001	FGD-1-052617	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0245292002	FGD-2-052617	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0245292003	FGD-3-052617	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0245292004	FGD-4-052617	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: EPA 200.7

Description: 200.7 Metals, Total **Client:** WESTAR ENERGY **Date:** June 19, 2017

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 479127

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60245129001,60245129002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1962385)
 - Calcium
- MS (Lab ID: 1962387)
 - Boron
 - Calcium
- MSD (Lab ID: 1962386)
 - Calcium

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: June 19, 2017

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: June 19, 2017

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** June 19, 2017

General Information:

4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: June 19, 2017

General Information:

4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:June 19, 2017

General Information:

4 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: June 19, 2017

General Information:

4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: June 19, 2017

General Information:

4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- FGD-1-052617 (Lab ID: 60245292001)
- FGD-2-052617 (Lab ID: 60245292002)
- FGD-3-052617 (Lab ID: 60245292003)
- FGD-4-052617 (Lab ID: 60245292004)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: June 19, 2017

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

Sample: FGD-1-052617	Lab ID: 602	245292001	Collected: 05/26/1	7 13:11	Received: 05	5/27/17 08:50 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.30	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:14	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:14	7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1		06/07/17 18:14		
Calcium, Total Recoverable	97.3	mg/L	0.10	1		06/07/17 18:14		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		06/07/17 18:14		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		06/07/17 18:14		
_ithium	0.014	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:14	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:01	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:01	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 19:01	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:01	7440-48-4	
Molybdenum, Total Recoverable	0.0014	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:01	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		06/15/17 19:01		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:01	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	06/09/17 16:43	06/12/17 11:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC					
Total Dissolved Solids	545	mg/L	5.0	1		05/31/17 09:39		
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	O-H+B					
oH at 25 Degrees C	7.6	Std. Units	0.10	1		06/06/17 12:00		H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	66.2	mg/L	10.0	10		05/31/17 21:25	16887-00-6	
Fluoride	0.36	mg/L	0.20	1		05/31/17 21:10	16984-48-8	
Sulfate	87.0	mg/L	10.0	10		05/31/17 21:25	14808-79-8	



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

Sample: FGD-2-052617	Lab ID: 60245292002 Col		Collected: 05/26/1	llected: 05/26/17 13:58		5/27/17 08:50 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.081	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:16	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:16	7440-41-7	
Boron, Total Recoverable	0.25	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:16	7440-42-8	
Calcium, Total Recoverable	158	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:16	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:16	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:16	7439-92-1	
_ithium	<0.010	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:16	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:08	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:08	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 19:08	7440-43-9	
Cobalt, Total Recoverable	0.0014	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:08	7440-48-4	
Molybdenum, Total Recoverable	0.0038	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:08	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:08	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:08	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	06/09/17 16:43	06/12/17 11:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	772	mg/L	5.0	1		05/31/17 09:40)	
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
oH at 25 Degrees C	7.5	Std. Units	0.10	1		06/06/17 12:00)	H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	36.9	mg/L	2.0	2		05/31/17 21:55	16887-00-6	
Fluoride	0.35	mg/L	0.20	1		05/31/17 21:40	16984-48-8	
Sulfate	299	mg/L	25.0	25		06/01/17 17:03	14808-79-8	



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

Sample: FGD-3-052617	Lab ID: 60245292003		Collected: 05/26/17 14:42		Received: 05/27/17 08:50		Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua			
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7										
Barium, Total Recoverable	0.14	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:38	7440-39-3				
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/08/17 13:38	7440-41-7				
Boron, Total Recoverable	<0.10	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:38	7440-42-8				
Calcium, Total Recoverable	115	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:38	7440-70-2				
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:38	7440-47-3				
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		06/08/17 13:38					
_ithium	0.012	mg/L	0.010	1	06/01/17 09:44	06/08/17 13:38	7439-93-2				
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8						
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:14	7440-36-0				
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:14	7440-38-2				
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 19:14	7440-43-9				
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:14	7440-48-4				
Molybdenum, Total Recoverable	0.0059	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:14	7439-98-7				
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:14	7782-49-2				
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:14	7440-28-0				
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1						
Mercury	<0.00020	mg/L	0.00020	1	06/09/17 16:43	06/12/17 11:58	7439-97-6				
2540C Total Dissolved Solids	Analytical Method: SM 2540C										
Total Dissolved Solids	637	mg/L	5.0	1		05/31/17 09:40					
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B										
pH at 25 Degrees C	7.6	Std. Units	0.10	1		06/06/17 12:00		H6			
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0										
Chloride	40.8	mg/L	5.0	5		05/31/17 22:39	16887-00-6				
Fluoride	0.29	mg/L	0.20	1		05/31/17 22:24	16984-48-8				
Sulfate	166	mg/L	25.0	25		05/31/17 22:54	14808-70-8				



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

Sample: FGD-4-052617	Lab ID: 602	245292004	Collected: 05/26/1	7 15:47	Received: 05	5/27/17 08:50 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.056	mg/L	0.010	2	06/01/17 09:44	06/08/17 13:07	7440-39-3	
Beryllium, Total Recoverable	<0.0020	mg/L	0.0020	2	06/01/17 09:44	06/08/17 13:07	7440-41-7	
Boron, Total Recoverable	0.28	mg/L	0.10	1	06/01/17 09:44			
Calcium, Total Recoverable	169	mg/L	0.20	2	06/01/17 09:44	06/08/17 13:07	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:41	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44			
ithium	<0.020	mg/L	0.020	2	06/01/17 09:44	06/08/17 13:07	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:20	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:20	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 19:20	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:20	7440-48-4	
Molybdenum, Total Recoverable	0.0038	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:20	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:20	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 19:20	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	06/09/17 16:43	06/12/17 11:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	1040	mg/L	5.0	1		05/31/17 09:41		
1500H+ pH, Electrometric	Analytical Met	hod: SM 4500	0-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		06/06/17 12:00		H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	85.3	mg/L	10.0	10		06/01/17 00:09	16887-00-6	
Fluoride	0.31	mg/L	0.20	1		05/31/17 23:54	16984-48-8	
Sulfate	398	mg/L	50.0	50		05/31/17 23:09		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

MATRIX SPIKE SAMPLE:

Date: 06/19/2017 04:26 PM

QC Batch: 479800 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1965095 Matrix: Water
Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 06/12/17 11:26

LABORATORY CONTROL SAMPLE: 1965096

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0053 105 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1965097 1965098

1965099

MS MSD 60245491002 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0050 70-130 3 20 Mercury mg/L .005 .005 0.0048 96 100

60245292001 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.00020 70-130 Mercury mg/L .005 0.0049 97

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

QC Batch: 479127 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1962383 Matrix: Water
Associated Lab Samples: 60245292001 60245292002 60245292003 60245292004

Associated Lab Samples:	60245292001, 60245292002	, 60245292003,	60245292004
		Diami	Danasia

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	< 0.0050	0.0050	06/07/17 17:40	
Beryllium	mg/L	< 0.0010	0.0010	06/07/17 17:40	
Boron	mg/L	<0.10	0.10	06/07/17 17:40	
Calcium	mg/L	< 0.10	0.10	06/07/17 17:40	
Chromium	mg/L	< 0.0050	0.0050	06/07/17 17:40	
Lead	mg/L	< 0.0050	0.0050	06/07/17 17:40	
Lithium	mg/L	<0.010	0.010	06/07/17 17:40	

LABORATORY CO	UNDTING	CAMPLE:	1962384
TABURATURY G	וטאועונ	SAIVIPLE:	1907384

Date: 06/19/2017 04:26 PM

ENDORVITORY CONTINUED, WIN EE.	1002004	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.0	100	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.99	99	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	1.0	100	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 19623	85		1962386							
Parameter	6 Units	60245129001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.072	1	1	1.0	1.0	95	95	70-130	0	20	
Beryllium	mg/L	< 0.0010	1	1	0.96	0.97	96	97	70-130	1	20	
Boron	mg/L	0.70	1	1	1.7	1.6	95	94	70-130	1	20	
Calcium	mg/L	152	10	10	158	158	62	58	70-130	0	20	M1
Chromium	mg/L	< 0.0050	1	1	0.94	0.95	94	95	70-130	1	20	
Lead	mg/L	< 0.0050	1	1	0.91	0.91	91	91	70-130	0	20	
Lithium	mg/L	0.023	1	1	1.0	1.0	99	99	70-130	1	20	

MATRIX SPIKE SAMPLE:	1962387						
		60245129002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.28	1	1.0	71	70-130	
Beryllium	mg/L	< 0.0010	1	0.98	98	70-130	
Boron	mg/L	0.26	1	2.3	205	70-130 M	1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

MATRIX SPIKE SAMPLE:	1962387						
Parameter	Units	60245129002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
——————————————————————————————————————						Limito	- Q ualificis
Calcium	mg/L	177	10	224	471	70-130) M1
Chromium	mg/L	< 0.0050	1	1.0	102	70-130)
Lead	mg/L	< 0.0050	1	0.96	96	70-130)
Lithium	mg/L	<0.010	1	0.98	98	70-130)

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

QC Batch: 478816 Analysis Method: EPA 200.8 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1961478 Matrix: Water

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	< 0.0010	0.0010	05/31/17 12:50	
Arsenic	mg/L	< 0.0010	0.0010	05/31/17 12:50	
Cadmium	mg/L	< 0.00050	0.00050	05/31/17 12:50	
Cobalt	mg/L	< 0.0010	0.0010	05/31/17 12:50	
Molybdenum	mg/L	< 0.0010	0.0010	05/31/17 12:50	
Selenium	mg/L	< 0.0010	0.0010	05/31/17 12:50	
Thallium	mg/L	< 0.0010	0.0010	05/31/17 12:50	

I ABORATORY CONTROL	OANDIE	4004470
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Date: 06/19/2017 04:26 PM

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.039	98	85-115	
Arsenic	mg/L	.04	0.039	98	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.039	98	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.037	92	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 19614	80		1961481							
	_		MS	MSD								
	6	0245311001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	ND	.04	.04	0.039	0.039	95	95	70-130	0	20	
Arsenic	mg/L	40.0 ug/L	.04	.04	0.078	0.080	94	100	70-130	3	20	
Cadmium	mg/L	ND	.04	.04	0.036	0.037	90	91	70-130	1	20	
Cobalt	mg/L	ND	.04	.04	0.042	0.042	92	94	70-130	2	20	
Molybdenum	mg/L	ND	.04	.04	0.043	0.043	106	105	70-130	1	20	
Selenium	mg/L	ND	.04	.04	0.035	0.035	87	87	70-130	1	20	
Thallium	mg/L	ND	.04	.04	0.038	0.038	94	94	70-130	0	20	

MATRIX SPIKE SAMPLE:	1961482	60245129001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	% Rec	Qualifiers
Antimony		<0.0010		0.038		70 120	
Antimony	mg/L		.04		96	70-130	
Arsenic	mg/L	0.0013	.04	0.037	89	70-130	
Cadmium	mg/L	<0.00050	.04	0.035	88	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

MATRIX SPIKE SAMPLE:	1961482						
Parameter	Units	60245129001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Farameter	Offics	Result	COIIC.	Result	70 KeC	LIIIIIIS	Qualifiers
Cobalt	mg/L	< 0.0010	.04	0.037	89	70-130	
Molybdenum	mg/L	0.0089	.04	0.051	104	70-130	
Selenium	mg/L	< 0.0010	.04	0.033	83	70-130	
Thallium	mg/L	< 0.0010	.04	0.034	85	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

QC Batch: 478945 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1961877 Matrix: Water
Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 05/31/17 09:32

LABORATORY CONTROL SAMPLE: 1961878

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 937 94 80-120

SAMPLE DUPLICATE: 1961879

60245271001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 479 10 **Total Dissolved Solids** 484 1 mg/L

SAMPLE DUPLICATE: 1961880

Date: 06/19/2017 04:26 PM

60245290003 Dup Max RPD RPD Parameter Units Result Result Qualifiers 3740 **Total Dissolved Solids** mg/L 3750 0 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

QC Batch: 479836 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

SAMPLE DUPLICATE: 1965272

Date: 06/19/2017 04:26 PM

60245292001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.6 pH at 25 Degrees C 7.6 5 H6 Std. Units 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

QC Batch: 478968 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1961900 Matrix: Water Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

		Diarik	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	05/31/17 09:01	
Fluoride	mg/L	< 0.20	0.20	05/31/17 09:01	
Sulfate	mg/L	<1.0	1.0	05/31/17 09:01	

LABORATORY CONTROL SAMPLE:	1961901					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		5.0	100	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIR	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1961902 1961903													
			MS	MSD										
	6	0245259005	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max			
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual		
Chloride	mg/L	30.3	25	25	56.4	56.3	104	104	80-120	0	15			
Fluoride	mg/L	ND	12.5	12.5	13.8	13.7	107	106	80-120	0	15			
Sulfate	mg/L	33.1	25	25	58.6	58.3	102	101	80-120	1	15			

MATRIX SPIKE SAMPLE:	1961904						
Parameter	Units	60245137009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5.4	5	10.7	104	80-120	
Fluoride	mg/L	0.21	2.5	2.9	106	80-120	
Sulfate	mg/L	12.9	5	18.2	106	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



JEC CCR GROUNDWATER Project:

Pace Project No.: 60245292

QC Batch: 479186 QC Batch Method:

EPA 300.0

Analysis Method: Analysis Description: EPA 300.0 300.0 IC Anions

Analyzed

1.0 06/01/17 09:12

60245292002 Associated Lab Samples:

METHOD BLANK: 1962661

Matrix: Water

<1.0

Associated Lab Samples:

Date: 06/19/2017 04:26 PM

60245292002

Blank Result

Reporting

Parameter

Units

Limit

Qualifiers

Sulfate mg/L

LABORATORY CONTROL SAMPLE:

Parameter

1962662

Units

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Sulfate mg/L 5.2 105 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1962663

1962664

MS

MSD 60245358001 Spike Spike Conc.

MSD

MS

MSD % Rec % Rec RPD

Max RPD

MS Parameter Units Result Conc. Result Result % Rec Limits Qual Sulfate ND 80-120 0 mg/L 50 50 53.6 53.8 107 108 15

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Sample: FGD-1-052617 PWS:	Lab ID: 6024529 Site ID:	2001 Collected: 05/26/17 13:11 Sample Type:	Received:	05/27/17 08:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.501 ± 0.463 (0.674) C:NA T:90%	pCi/L	06/12/17 21:34	13982-63-3	
Radium-228	EPA 904.0	0.426 ± 0.294 (0.561) C:82% T:93%	pCi/L	06/14/17 14:28	3 15262-20-1	
Total Radium	Total Radium Calculation	0.927 ± 0.757 (1.24)	pCi/L	06/15/17 12:46	7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Sample: FGD-2-052617 Lab ID: 60245292002 Collected: 05/26/17 13:58 Received: 05/27/17 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.385 \pm 0.504 \quad (0.840)$ Radium-226 pCi/L 06/12/17 21:48 13982-63-3 C:NA T:87% EPA 904.0 0.535 ± 0.391 (0.762) Radium-228 pCi/L 06/14/17 14:28 15262-20-1 C:74% T:83% Total Radium **Total Radium** 0.920 ± 0.895 (1.60) pCi/L 06/15/17 12:46 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Sample: FGD-3-052617 Lab ID: 60245292003 Collected: 05/26/17 14:42 Received: 05/27/17 08:50 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 1.10 ± 0.526 (0.166) Radium-226 pCi/L 06/12/17 21:48 13982-63-3 C:NA T:96% EPA 904.0 0.402 ± 0.411 (0.846) Radium-228 pCi/L 06/14/17 14:29 15262-20-1 C:74% T:67% Total Radium **Total Radium** 1.50 ± 0.937 (1.01) pCi/L 06/15/17 12:46 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Sample: FGD-4-052617 PWS:	Lab ID: 60245 2 Site ID:	292004 Collected: 05/26/17 15:47 Sample Type:	Received:	05/27/17 08:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.367 ± 0.417 (0.658) C:NA T:93%	pCi/L	06/12/17 21:48	13982-63-3	
Radium-228	EPA 904.0	0.285 ± 0.325 (0.679) C:68% T:85%	pCi/L	06/14/17 14:29	15262-20-1	
Total Radium	Total Radium Calculation	$0.652 \pm 0.742 (1.34)$	pCi/L	06/15/17 12:46	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

QC Batch: 260596 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1283376 Matrix: Water

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.0588 \pm 0.383 (0.771) C:NA T:96% pCi/L 06/12/17 21:18

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

QC Batch: 260868 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

METHOD BLANK: 1284605 Matrix: Water

Associated Lab Samples: 60245292001, 60245292002, 60245292003, 60245292004

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-228 $0.409 \pm 0.296 \quad (0.562) \text{ C:}78\% \text{ T:}83\% \quad \text{pCi/L} \quad 06/14/17 \; 10:50$

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 06/19/2017 04:26 PM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245292

Date: 06/19/2017 04:26 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60245292001	FGD-1-052617	EPA 200.7	479127	EPA 200.7	479269
60245292002	FGD-2-052617	EPA 200.7	479127	EPA 200.7	479269
60245292003	FGD-3-052617	EPA 200.7	479127	EPA 200.7	479269
60245292004	FGD-4-052617	EPA 200.7	479127	EPA 200.7	479269
0245292001	FGD-1-052617	EPA 200.8	478816	EPA 200.8	478960
0245292002	FGD-2-052617	EPA 200.8	478816	EPA 200.8	478960
0245292003	FGD-3-052617	EPA 200.8	478816	EPA 200.8	478960
0245292004	FGD-4-052617	EPA 200.8	478816	EPA 200.8	478960
0245292001	FGD-1-052617	EPA 245.1	479800	EPA 245.1	480611
0245292002	FGD-2-052617	EPA 245.1	479800	EPA 245.1	480611
0245292003	FGD-3-052617	EPA 245.1	479800	EPA 245.1	480611
0245292004	FGD-4-052617	EPA 245.1	479800	EPA 245.1	480611
0245292001	FGD-1-052617	EPA 903.1	260596		
0245292002	FGD-2-052617	EPA 903.1	260596		
0245292003	FGD-3-052617	EPA 903.1	260596		
0245292004	FGD-4-052617	EPA 903.1	260596		
0245292001	FGD-1-052617	EPA 904.0	260868		
0245292002	FGD-2-052617	EPA 904.0	260868		
0245292003	FGD-3-052617	EPA 904.0	260868		
0245292004	FGD-4-052617	EPA 904.0	260868		
0245292001	FGD-1-052617	Total Radium Calculation	261901		
0245292002	FGD-2-052617	Total Radium Calculation	261901		
0245292003	FGD-3-052617	Total Radium Calculation	261901		
0245292004	FGD-4-052617	Total Radium Calculation	261901		
0245292001	FGD-1-052617	SM 2540C	478945		
0245292002	FGD-2-052617	SM 2540C	478945		
0245292003	FGD-3-052617	SM 2540C	478945		
60245292004	FGD-4-052617	SM 2540C	478945		
0245292001	FGD-1-052617	SM 4500-H+B	479836		
0245292002	FGD-2-052617	SM 4500-H+B	479836		
0245292003	FGD-3-052617	SM 4500-H+B	479836		
0245292004	FGD-4-052617	SM 4500-H+B	479836		
0245292001	FGD-1-052617	EPA 300.0	478968		
60245292002	FGD-2-052617	EPA 300.0	478968		
60245292002	FGD-2-052617	EPA 300.0	479186		
0245292003	FGD-3-052617	EPA 300.0	478968		
60245292004	FGD-4-052617	EPA 300.0	478968		



Sample Condition Upon Receipt



Client Name: //es/a		
Courier: FedEx UPS VIA Clay F	PEX 🗆 ECI 🗆	Pace □ Xroads □ Client □ Other □
Tracking #: Pace	e Shipping Label Use	d? Yes ☑ No □
Custody Seal on Cooler/Box Present: Yes ☐ No ☐	Seals intact: Yes	No □
Packing Material: Bubble Wrap ☐ Bubble Bags ☐ CF +2.9 OF +0.52 Type of	Foam □ Ice Wet Blue No	
Cooler Temperature (°C): As-read 3,4 Corr. Factor	or CF +2.9 CF +02 Correct	ted 3.6 Date and Initials of person examining contents:
Temperature should be above freezing to 6°C		
Chain of Custody present:	□¥es □No □N/A	
Chain of Custody relinquished:	Yes No N/A	
Samples arrived within holding time:	ØYes ØNo □N/A	
Short Hold Time analyses (<72hr):	TYES No NA	M
Rush Turn Around Time requested:	□Yes □No □N/A	Y
Sufficient volume:	Yes ONO ON/A	
Correct containers used:	Yes ONO ON/A	
Pace containers used:	Yes ONO ON/A	
Containers intact:	Yes ONO ON/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ☑N/A	
Filtered volume received for dissolved tests?	□Yes □No ØN/A	
Sample labels match COC: Date / time / ID / analyses	Yes No N/A	
Samples contain multiple phases? Matrix:	□Yes No □N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	□Yes □No □N/A	
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	□Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No	
Trip Blank present:	□Yes ☑No □N/A	
Headspace in VOA vials (>6mm):	□Yes □No ☑N/A	
Samples from USDA Regulated Area: State:	□Yes □No □MA	
Additional labels attached to 5035A / TX1005 vials in the field' Client Notification/ Resolution: Copy COC to		Field Data Required? Y / N
Person Contacted: Date/T	ime:	
Comments/ Resolution:		
Project Manager Review:	Dat	e,

By hwilson at 9:58 am, 5/30/17



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

ection A equired Client Information:	Section B Required Project Information:	Section C Invoice Information:		Page: of
ompany: WESTAR ENERGY	Report To: Brandon Griffin	Attention: Jared Morrison		
ddress: 818 Kansas Ave	Copy To: Jared Morrison, Heath Hornya	Company Name: WESTAR ENERGY	REGULATORY AGENCY	
Topeka, KS 66612		Address: SEE SECTION A	₩ NPDES ☐ GROUND	WATER DRINKING WATER
mail To: brandon.l.griffin@westarenergy.com	Purchase Order No.:	Pace Quote	□ UST □ RCRA	
hone: (785) 575-8135 Fax:	Project Name: JEC CCR Groundwater	Reference: Pace Project Heather Wilson, 913-563-1407	Site Location	
equested Due Date/TAT: 7 DAY	Project Number,	Manager: Pace Profile #: 9657, 1	STATE: KS	_
equested Due Date (A).	1 10/2011 1131113011		sted Analysis Filtered (Y/N)	V
				*
Section D Valid Matrix Regulared Client Information MATRIX	Codes CODE COLLECTED	Preservatives ≥		
SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE Sample IDs MUST BE UNIQUE Sample IDs MUST BE UNIQUE Specification of the control of t	WT WW PB COMPOSITE COMPOSITE START COMPOSITE END/GRAB P SL OO DE START COMPOSITE END/GRAB OL OT TS COMPOSITE START COMPOSITE END/GRAB OT TS COMPOSITE START DATE	Served Served D3 nol Iyais Test Total Metals*	245.1 Total Mercury 300.0 Cl, Fl, SO4 4500 H+B 2540C TDS Radium 226 Radium 228	Pace Project No./ Lab I.D. 2 BPIN BAN BOW M
1 FGD-1-052617		358 4 1 3		as
2 FGO-2-052617		442 4 1 3		W
3 FGD-3-052617		547 4 (3		1 ay
4 FGD-4-052617	W/ B 3/26/1			
5				
6				
7				
8				
10				
11				
12				
ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE TIME ACCEPTED BY / AFFILIA		SAMPLE CONDITIONS
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	MAN Wester	5/26 1745 Burd M	2/18/12 0000	3.6 4 4 9
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl				
P age	SAMPLER NAME AN	ID SIGNATURE		act act
e 36 of 38	PRINT Name	of SAMPLER: Branden Griffin	Signed 05/26/17	Received on Ice (Y/N) Custody Sealed Cooler (Y/N) Samples Intact (Y/N)

Chain of Custody



10177330047720	TO THE PARTY OF TH	korder i	Name:JEC CCI		ATER		Own	er Recei	ved	Date	: 5/27/2017	Results Requested By	: 6/21/2017
Rep	ort To		Subcontra	t To							Requested	Analysis	
Pac 960 Len	ther Wilson e Analytical Kansas 8 Loiret Blvd. exa, KS 66219 ne 1(913)563-1407		1638 Suites Green	Analytical Pittsb Roseytown Roa 2,3, & 4 sburg, PA 1560 (724)850-5600	d)1	Pro	served Con	to make the	Radiun-228	-226 & Total Radium	WO#;	30220260	
item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HINO3			THE	Radium	32220260		LAB USE ONLY
1	FGD-1-052617	PS	5/26/2017 13:11	60245292001	Water	2			Х	Х			(7)
2	FGD-2-052617	PS	5/26/2017 13:58	60245292002	Water	2			X	Х			
3	FGD-3-052617	PS	5/26/2017 14:42	60245292003	Water	2		A COLUMN TO THE	Х	Х			002 003
4	FGD-4-052617	PS	5/26/2017 15:47	60245292004	Water	2		and the same of th	Х	X	TO STATE OF THE ST		004
5			and the Property deligible of School			200-1200 (510-100)					Vanas (Albinos)		
Trar	sfers Released By	trivata nda	Date/Time	Received B	santa kanala V	Berkertine)		Date/Tim	iiiiiiiii ie			Comments	
1 2 3	My Su Ba		5/25/17	L				5/31/17	-	2 2			
Coe	oler Temperature on Receipt	: NA		stody Seal 🚫	or N	Į	Rec	eived on	lce	Υ	or N	Samples Intact	n N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh

30220260

-
-
11
1.4
200

Pace Analytical	Client Name:		Pai	u	Kansas	_	Project#
Courier: Fed Ex	UPS USPS Clier	nt 🗆	Comn	nercial	Pace Other		
Tracking #: <u>7285</u>	<u> </u>	[-	C- '	Intent: Prin-	[-]	no
Custody Seal on Cooler							HO HO
Thermometer Used	<u> </u>				Blue Mone	Α	°C Final Tames A (\A °C
•	Observed Temp M	4	· C	Corr	ection Factor <u>: /V</u>		°C Final Temp: NA °C
Temp should be above freezi	ng to 6°C						Date and Initials of person examining contents: 44 5 13/117
Comments:		Yes	No	N/A	7		contents: <u>4K9K 5 / 3///</u>
		7	<u> </u>		1.		
Chain of Custody Present				1	2,		
Chain of Custody Filled O		1			3.		
Chain of Custody Relinqu				-	4.		
Sampler Name & Signatu			- Annual Control		5.		
Sample Labels match CO	C: Matrix: <u>M</u> -		L	<u> </u>			
-Includes date/time/ID				Ī	6.		
Samples Arrived within Ho							
Short Hold Time Analysi				-	7.		
Rush Turn Around Time	Requested:		/		8.		
Sufficient Volume:		مر		<u> </u>	9.		
Correct Containers Used:			-		10.		
-Pace Containers Used	ł:						April 1
Containers Intact:				1250035	11.		
Orthophosphate field filter		-			12.		
Organic Samples check	ed for dechlorination:				13.		- Water
Filtered volume received for All containers have been che	or Dissolved tests				14.		
All containers have been che	cked for preservation.				15. PH < 2		
All containers needing presen							
compliance with EPA recomm	e(30280)1.				Initial when		Date/time of
exceptions: VOA, coliform, TOC, O&G, Phenolics					Initial when completed		preservation
					Lot # of added preservative		
Headspace in VOA Vials (>6mm):				16.		
Trip Blank Present:				/	17.		
Trip Blank Custody Seals I	Present						
Rad Aqueous Samples S					Initial when completed: 伏钟		Date: 5/31/17
Client Notification/ Resol	lution:		,		<u> </u>		
				Date/	Γime:		Contacted By:
Comments/ Resolution:							
					pa		
A check in this be	ox indicates that addit	tional	infori	natio	n has been store	d in	ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 1-8
June 2017 Sampling Event
Laboratory Analytical Report





July 25, 2017

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on July 01, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

danson Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY



9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification
Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457 New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Lab ID	Sample ID	Matrix	Date Collected	Date Received	
60247861001	FGD-1-062917	Water	06/29/17 15:35	07/01/17 09:00	
60247861002	FGD-2-063017	Water	06/30/17 08:17	07/01/17 09:00	
60247861003	FGD-3-063017	Water	06/30/17 09:38	07/01/17 09:00	
60247861004	FGD-4-063017	Water	06/30/17 10:58	07/01/17 09:00	
60247861005	DUP-063017	Water	06/30/17 06:00	07/01/17 09:00	

(913)599-5665



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247861001	FGD-1-062917	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0247861002	FGD-2-063017	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0247861003	FGD-3-063017	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0247861004	FGD-4-063017	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0247861005	DUP-063017	EPA 200.7	TDS	7	PASI-K

(913)599-5665



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 484970

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60247861001,60247926002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1986117)
 - Calcium
- MSD (Lab ID: 1986118)
 - Calcium



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

(913)599-5665



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** July 25, 2017

General Information:

5 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

(913)599-5665



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** July 25, 2017

General Information:

5 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 264520

1e: Ra-228 activity in the MB is greater than the associated MDC and RL of 1.0 pCi/L. Samples with activity results below their sample specific MDC or the RL are reportable without qualification.

- BLANK (Lab ID: 1302880)
 - Radium-228



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:July 25, 2017

General Information:

5 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: July 25, 2017

General Information:

5 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 483904

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1982355)
 - Total Dissolved Solids



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:

5 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- DUP-063017 (Lab ID: 60247861005)
- FGD-1-062917 (Lab ID: 60247861001)
- FGD-2-063017 (Lab ID: 60247861002)
- FGD-3-063017 (Lab ID: 60247861003)
- FGD-4-063017 (Lab ID: 60247861004)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

Sample: FGD-1-062917	Lab ID: 602	247861001	Collected: 06/29/1	7 15:35	Received: 07	7/01/17 09:00 N	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua	
200.7 Metals, Total	Analytical Met	hod: EPA 200	0.7 Preparation Met	hod: EP	PA 200.7				
Barium, Total Recoverable	0.29	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:29	7440-39-3		
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/15/17 13:29	7440-41-7		
Boron, Total Recoverable	0.11	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:29	7440-42-8		
Calcium, Total Recoverable	90.4	mg/L	0.10	1		07/15/17 13:29		M1	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:29	7440-47-3		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:29	7439-92-1		
₋ithium	0.015	mg/L	0.010	1	07/12/17 16:35	07/15/17 13:29	7439-93-2		
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EP	PA 200.8				
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:52	7440-36-0		
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:52	7440-38-2		
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 14:52	7440-43-9		
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:52	7440-48-4		
Molybdenum, Total Recoverable	0.0013	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:52	7439-98-7		
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:52	7782-49-2		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:52	7440-28-0		
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	PA 245.1				
Mercury	<0.00020	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:10	7439-97-6		
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC						
Total Dissolved Solids	515	mg/L	5.0	1		07/05/17 15:55			
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B						
oH at 25 Degrees C	7.3	Std. Units	0.10	1		07/05/17 12:04		H6	
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0						
Chloride	49.7	mg/L	5.0	5		07/23/17 13:06	16887-00-6		
Fluoride	0.35	mg/L	0.20	1		07/22/17 16:30	16984-48-8		
Sulfate	93.1	mg/L	5.0	5		07/23/17 13:06	14808-79-8		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

Sample: FGD-2-063017	Lab ID: 602	247861002	Collected: 06/30/1	7 08:17	Received: 07	/01/17 09:00 ľ	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.076	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:47	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/15/17 13:47	7440-41-7	
Boron, Total Recoverable	0.23	mg/L	0.10	1	07/12/17 16:35			
Calcium, Total Recoverable	131	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:47	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:47	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35			
ithium	<0.010	mg/L	0.010	1	07/12/17 16:35	07/15/17 13:47	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:56	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:56	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 14:56	7440-43-9	
Cobalt, Total Recoverable	0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:56	7440-48-4	
Molybdenum, Total Recoverable	0.0037	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:56	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:56	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 14:56	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	710	mg/L	5.0	1		07/06/17 16:16	i	
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	0-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		07/05/17 12:12		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	35.6	mg/L	5.0	5		07/23/17 14:41	16887-00-6	
Fluoride	0.31	mg/L	0.20	1		07/22/17 17:14	16984-48-8	
Sulfate	247	mg/L	20.0	20		07/23/17 15:45	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

Sample: FGD-3-063017	Lab ID: 602	247861003	Collected: 06/30/1	7 09:38	Received: 07	//01/17 09:00 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.14	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:51	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/15/17 13:51	7440-41-7	
Boron, Total Recoverable	0.13	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:51	7440-42-8	
Calcium, Total Recoverable	142	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:51	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:51	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:51	7439-92-1	
ithium	0.016	mg/L	0.010	1	07/12/17 16:35	07/15/17 13:51	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200).8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:00	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:00	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:00	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:00	7440-48-4	
Molybdenum, Total Recoverable	0.0055	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:00	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:00	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:00	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:14	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	825	mg/L	5.0	1		07/06/17 16:16	i	
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	0-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		07/05/17 12:14		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	59.1	mg/L	5.0	5		07/23/17 16:17	16887-00-6	
Fluoride	0.24	mg/L	0.20	1		07/22/17 17:44	16984-48-8	
Sulfate	246	mg/L	20.0	20		07/23/17 16:33	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

Sample: FGD-4-063017	Lab ID: 602	247861004	Collected: 06/30/1	7 10:58	Received: 07	7/01/17 09:00 N	Natrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Met	hod: EPA 200).7 Preparation Met	hod: EF	A 200.7			
Barium, Total Recoverable	0.052	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:54	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/15/17 13:54	7440-41-7	
Boron, Total Recoverable	0.28	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:54	7440-42-8	
Calcium, Total Recoverable	164	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:54	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:54	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:54	7439-92-1	
Lithium	0.012	mg/L	0.010	1	07/12/17 16:35	07/15/17 13:54	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EF	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:04	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:04	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:04	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:04	7440-48-4	
Molybdenum, Total Recoverable	0.0036	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:04	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:04	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:04	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EF	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:16	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC					
Total Dissolved Solids	1010	mg/L	5.0	1		07/06/17 16:21		
1500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		07/05/17 12:22		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	85.7	mg/L	10.0	10		07/23/17 16:49	16887-00-6	
Fluoride	0.43	mg/L	0.20	1		07/22/17 17:58	16984-48-8	
Sulfate	409	mg/L	50.0	50		07/23/17 17:04	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

Sample: DUP-063017	Lab ID: 602	247861005	Collected: 06/30/1	7 06:00	Received: 07	7/01/17 09:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.075	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:58	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/15/17 13:58	7440-41-7	
Boron, Total Recoverable	0.23	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:58	7440-42-8	
Calcium, Total Recoverable	131	mg/L	0.10	1	07/12/17 16:35	07/15/17 13:58	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:58	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 13:58	7439-92-1	
_ithium	<0.010	mg/L	0.010	1	07/12/17 16:35	07/15/17 13:58	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:09	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:09	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:09	7440-43-9	
Cobalt, Total Recoverable	0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:09	7440-48-4	
Molybdenum, Total Recoverable	0.0036	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:09	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:09	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:09	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	706	mg/L	5.0	1		07/06/17 16:22		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		07/05/17 12:09		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	35.5	mg/L	5.0	5		07/23/17 17:20	16887-00-6	
Fluoride	0.30	mg/L	0.20	1		07/22/17 18:13	16984-48-8	
Sulfate	243	mg/L	20.0	20		07/23/17 17:36	1/808-70-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

 QC Batch:
 485719
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1989430 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

Blank Reporting

 Parameter
 Units
 Result
 Limit
 Analyzed
 Qualifiers

 Mercury
 mg/L
 <0.00020</td>
 0.00020
 07/19/17 09:59

LABORATORY CONTROL SAMPLE: 1989431

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0050 101 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1989432 1989433

MS MSD 60248711001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0050 70-130 2 20 H3 Mercury mg/L .005 .005 0.0050 99 101

MATRIX SPIKE SAMPLE: 1989434

60247863005 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.00020 70-130 Mercury mg/L .005 0.0049 98

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

 QC Batch:
 484970
 Analysis Method:
 EPA 200.7

 QC Batch Method:
 EPA 200.7
 Analysis Description:
 200.7 Metals, Total

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1986115 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/15/17 13:25	
Beryllium	mg/L	< 0.0010	0.0010	07/15/17 13:25	
Boron	mg/L	<0.10	0.10	07/15/17 13:25	
Calcium	mg/L	<0.10	0.10	07/15/17 13:25	
Chromium	mg/L	< 0.0050	0.0050	07/15/17 13:25	
Lead	mg/L	< 0.0050	0.0050	07/15/17 13:25	
Lithium	mg/L	< 0.010	0.010	07/15/17 13:25	

LABORATORY CONTROL SAMPLE:	1986116					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		0.96	96	85-115	
Beryllium	mg/L	1	0.94	94	85-115	
Boron	mg/L	1	0.95	95	85-115	
Calcium	mg/L	10	9.3	93	85-115	
Chromium	mg/L	1	0.96	96	85-115	
Lead	mg/L	1	1.0	105	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 19861	17		1986118							
	6	0247861001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD		Qual
Barium	mg/L	0.29	1	1	1.3	1.2	97	96	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	0.93	0.92	93	92	70-130	1	20	
Boron	mg/L	0.11	1	1	1.1	1.1	99	97	70-130	2	20	
Calcium	mg/L	90.4	10	10	96.4	96.3	60	59	70-130	0	20	M1
Chromium	mg/L	< 0.0050	1	1	0.96	0.94	96	94	70-130	2	20	
Lead	mg/L	< 0.0050	1	1	1.0	1.0	103	101	70-130	2	20	
Lithium	mg/L	0.015	1	1	1.0	1.0	102	100	70-130	1	20	

MATRIX SPIKE SAMPLE:	1986119						
		60247926002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.032	1	1.1	102	70-130	
Beryllium	mg/L	0.0011	1	0.97	97	70-130	
Boron	mg/L	3.6	1	4.6	98	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(913)599-5665



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

MATRIX SPIKE SAMPLE:	1986119		0 "			0.5	
Parameter	Units	60247926002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	289	10	302	129	70-130	
Chromium	mg/L	< 0.0050	1	0.99	99	70-130	
Lead	mg/L	< 0.0050	1	0.94	94	70-130	
Lithium	mg/L	0.015	1	1.1	111	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

 QC Batch:
 484967
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1986099 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/13/17 20:33	
Arsenic	mg/L	< 0.0010	0.0010	07/13/17 20:33	
Cadmium	mg/L	< 0.00050	0.00050	07/13/17 20:33	
Cobalt	mg/L	< 0.0010	0.0010	07/13/17 20:33	
Molybdenum	mg/L	< 0.0010	0.0010	07/13/17 20:33	
Selenium	mg/L	< 0.0010	0.0010	07/13/17 20:33	
Thallium	mg/L	< 0.0010	0.0010	07/13/17 20:33	

LABORATORY CONTROL SAMPLE:	1986100					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.040	100	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.038	95	85-115	
Molybdenum	mg/L	.04	0.040	101	85-115	
Selenium	mg/L	.04	0.039	96	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 19861	01		1986102							
Parameter	6 Units	0248127001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	4.3 ug/L	.04	.04	0.045	0.044	101	100	70-130	1	20	
Arsenic	mg/L	8.5 ug/L	.04	.04	0.047	0.046	96	94	70-130	2	20	
Cadmium	mg/L	<1.0 ug/L	.04	.04	0.034	0.033	86	83	70-130	3	20	
Cobalt	mg/L	<2.0 ug/L	.04	.04	0.036	0.035	89	87	70-130	3	20	
Molybdenum	mg/L	47.9 ug/L	.04	.04	0.090	0.089	104	102	70-130	1	20	
Selenium	mg/L	4.3 ug/L	.04	.04	0.042	0.040	94	90	70-130	4	20	
Thallium	mg/L	<2.0 ug/L	.04	.04	0.037	0.036	91	90	70-130	2	20	

MATRIX SPIKE SAMPLE:	1986103						
		60247926001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.036	90	70-130	
Arsenic	mg/L	< 0.0010	.04	0.038	93	70-130	
Cadmium	mg/L	< 0.00050	.04	0.033	83	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(913)599-5665



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

MATRIX SPIKE SAMPLE:	1986103	0004700004	Criter	MC	MC	0/ Dag	
Parameter	Units	60247926001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	 mg/L	<0.0010	.04	0.034	83	70-130	
Molybdenum	mg/L	0.011	.04	0.049	96	70-130	
Selenium	mg/L	< 0.0010	.04	0.035	88	70-130	
Thallium	mg/L	< 0.0010	.04	0.033	83	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

QC Batch: 483904 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60247861001

METHOD BLANK: 1982353 Matrix: Water

Associated Lab Samples: 60247861001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 07/05/17 15:44

LABORATORY CONTROL SAMPLE: 1982354

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 951 95 80-120

SAMPLE DUPLICATE: 1982355

60247636004 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 468 10 D6 **Total Dissolved Solids** 419 11 mg/L

SAMPLE DUPLICATE: 1982356

Date: 07/25/2017 09:19 AM

60247916001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 1010 **Total Dissolved Solids** mg/L 1000 0 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

QC Batch: 484210 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1983434 Matrix: Water Associated Lab Samples:

1983435

60247861002, 60247861003, 60247861004, 60247861005

Blank Reporting

Parameter Limit Analyzed Qualifiers Units Result **Total Dissolved Solids** <5.0 5.0 07/06/17 16:11 mg/L

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 982 98 80-120

SAMPLE DUPLICATE: 1983436

LABORATORY CONTROL SAMPLE:

60248024001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 440 10 **Total Dissolved Solids** 434 1 mg/L

SAMPLE DUPLICATE: 1983437

Date: 07/25/2017 09:19 AM

60247926001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 688 **Total Dissolved Solids** mg/L 690 0 10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

 QC Batch:
 483969
 Analysis Method:
 SM 4500-H+B

 QC Batch Method:
 SM 4500-H+B
 Analysis Description:
 4500H+B pH

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

SAMPLE DUPLICATE: 1982512

Date: 07/25/2017 09:19 AM

		60247835001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.2	1		5 H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

 QC Batch:
 486562
 Analysis Method:
 EPA 300.0

 QC Batch Method:
 EPA 300.0
 Analysis Description:
 300.0 IC Anions

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1992836 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 07/22/17 15:31

LABORATORY CONTROL SAMPLE: 1992837

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.5 99 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1992838 1992839

MS MSD 60247861001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride mg/L 0.35 2.5 2.5 3.0 3.0 106 107 80-120 15

MATRIX SPIKE SAMPLE: 1992840

MS 60247861002 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers 0.31 2.5 80-120 Fluoride mg/L 2.5 87

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Chloride

Date: 07/25/2017 09:19 AM

Sulfate

 QC Batch:
 486575
 Analysis Method:
 EPA 300.0

 QC Batch Method:
 EPA 300.0
 Analysis Description:
 300.0 IC Anions

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1993281 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

Blank Reporting Limit Qualifiers Parameter Units Result Analyzed <1.0 07/23/17 12:34 mg/L 1.0 mg/L <1.0 1.0 07/23/17 12:34

LABORATORY CONTROL SAMPLE: 1993282 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 97 90-110 mg/L Sulfate 5 5.0 100 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1993283 1993284 MS MSD 60247861001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 49.7 25 25 76.2 76.5 106 107 80-120 0 15 Sulfate mg/L 93.1 25 25 120 120 107 106 80-120 0 15

MATRIX SPIKE SAMPLE: 1993285 60247861002 MS MS % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride 35.6 25 61.0 102 80-120 mg/L 247 360 80-120 Sulfate mg/L 100 114

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Sample: FGD-1-062917 Lab ID: 60247861001 Collected: 06/29/17 15:35 Received: 07/01/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.416 \pm 0.390 \quad (0.552)$ Radium-226 pCi/L 07/17/17 12:22 13982-63-3 C:NA T:97% EPA 904.0 0.264 ± 0.408 (0.882) 07/19/17 18:38 15262-20-1 Radium-228 pCi/L C:81% T:79% Total Radium Total Radium $0.680 \pm 0.798 \quad (1.43)$ pCi/L 07/20/17 16:45 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Sample: FGD-2-063017 Lab ID: 60247861002 Collected: 06/30/17 08:17 Received: 07/01/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.891 ± 0.567 (0.685) Radium-226 pCi/L 07/17/17 12:22 13982-63-3 C:NA T:87% EPA 904.0 -0.185 ± 0.353 (0.871) 07/19/17 18:38 15262-20-1 Radium-228 pCi/L C:78% T:88% Total Radium Total Radium $0.891 \pm 0.920 \quad (1.56)$ pCi/L 07/20/17 16:45 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Sample: FGD-3-063017 Lab ID: 60247861003 Collected: 06/30/17 09:38 Received: 07/01/17 09:00 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.724 ± 0.538 (0.708) Radium-226 pCi/L 07/17/17 12:22 13982-63-3 C:NA T:87% EPA 904.0 $0.337 \pm 0.376 \quad (0.781)$ 07/19/17 18:39 15262-20-1 Radium-228 pCi/L C:79% T:85% Total Radium Total Radium $1.06 \pm 0.914 \quad (1.49)$ pCi/L 07/20/17 16:45 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Sample: FGD-4-063017 PWS:	Lab ID: 6024786 Site ID:	1004 Collected: 06/30/17 10:58 Sample Type:	Received:	07/01/17 09:00	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.395 ± 0.579 (0.989) C:NA T:89%	pCi/L	07/17/17 12:22	13982-63-3	
Radium-228	EPA 904.0	1.13 ± 0.515 (0.832) C:80% T:78%	pCi/L	07/19/17 18:39	9 15262-20-1	
Total Radium	Total Radium Calculation	1.53 ± 1.09 (1.82)	pCi/L	07/20/17 16:45	7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Sample: DUP-063017 PWS:	Lab ID: 6024786 Site ID:	Collected: 06/30/17 06:00 Sample Type:	Received:	07/01/17 09:00	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.726 ± 0.532 (0.732) C:NA T:98%	pCi/L	07/17/17 12:22	13982-63-3	
Radium-228	EPA 904.0	0.452 ± 0.456 (0.940) C:76% T:83%	pCi/L	07/19/17 18:39	9 15262-20-1	
Total Radium	Total Radium Calculation	1.18 ± 0.988 (1.67)	pCi/L	07/20/17 16:4	5 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

QC Batch: 264358 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1301994 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 -0.062 ± 0.285 (0.671) C:NA T:92%
 pCi/L
 07/17/17 12:04

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

 QC Batch:
 264520
 Analysis Method:
 EPA 904.0

 QC Batch Method:
 EPA 904.0
 Analysis Description:
 904.0 Radium 228

 Associated Lab Samples:
 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

METHOD BLANK: 1302880 Matrix: Water

Associated Lab Samples: 60247861001, 60247861002, 60247861003, 60247861004, 60247861005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 1.14 ± 0.453 (0.704) C:80% T:79%
 pCi/L
 07/19/17 11:38 1e
 1e

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(913)599-5665



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City
PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

Date: 07/25/2017 09:19 AM

1e	Ra-228 activity in the MB is greater than the associated MDC and RL of 1.0 pCi/L. Samples with activity results below
	their sample specific MDC or the RL are reportable without qualification.

The precision between the sample and sample duplicate exceeded laboratory control limits.
 Sample was received or analysis requested beyond the recognized method holding time.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

0247881002 FGD-2-083017 EPA 200.7 484470 EPA 200.7 485208 0247881004 FGD-3-083017 EPA 200.7 484970 EPA 200.7 485208 0247881004 FGD-3-063017 EPA 200.7 484970 EPA 200.7 485208 0247881001 FGD-1-062017 EPA 200.7 484970 EPA 200.7 485208 0247881002 FGD-3-063017 EPA 200.8 484967 EPA 200.8 485209 0247881003 FGD-3-063017 EPA 200.8 484967 EPA 200.8 485209 0247861005 FGD-3-063017 EPA 200.8 484967 EPA 200.8 485209 0247861005 DIP-063017 EPA 200.8 484967 EPA 200.8 485209 0247861005 FGD-3-063017 EPA 203.8 484967 EPA 200.8 485209 0247861007 FGD-2-063017 EPA 245.1 485719 EPA 245.1 485787 0247861003 FGD-3-063017 EPA 245.1 485719 EPA 245.1 485787 0247861005 FGD-2-063017 <t< th=""><th>Lab ID</th><th>Sample ID</th><th>QC Batch Method</th><th>QC Batch</th><th>Analytical Method</th><th>Analytical Batch</th></t<>	Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
0247881002 FGD-2-083017 EPA 200.7 484470 EPA 200.7 485208 0247881004 FGD-3-083017 EPA 200.7 484970 EPA 200.7 485208 0247881004 FGD-3-063017 EPA 200.7 484970 EPA 200.7 485208 0247881001 FGD-1-062017 EPA 200.7 484970 EPA 200.7 485208 0247881002 FGD-3-063017 EPA 200.8 484967 EPA 200.8 485209 0247881003 FGD-3-063017 EPA 200.8 484967 EPA 200.8 485209 0247861005 FGD-3-063017 EPA 200.8 484967 EPA 200.8 485209 0247861005 DIP-063017 EPA 200.8 484967 EPA 200.8 485209 0247861005 FGD-3-063017 EPA 203.8 484967 EPA 200.8 485209 0247861007 FGD-2-063017 EPA 245.1 485719 EPA 245.1 485787 0247861003 FGD-3-063017 EPA 245.1 485719 EPA 245.1 485787 0247861005 FGD-2-063017 <t< td=""><td>60247861001</td><td>FGD-1-062917</td><td>EPA 200.7</td><td>484970</td><td>EPA 200.7</td><td>485208</td></t<>	60247861001	FGD-1-062917	EPA 200.7	484970	EPA 200.7	485208
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	60247861001	FGD-1-062917	EPA 300.0	486562		
	60247861001	FGD-1-062917	EPA 300.0	486575		
	60247861002	FGD-2-063017	EPA 300.0	486562		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247861

Date: 07/25/2017 09:19 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60247861002	FGD-2-063017	EPA 300.0	486575		
60247861003	FGD-3-063017	EPA 300.0	486562		
60247861003	FGD-3-063017	EPA 300.0	486575		
60247861004	FGD-4-063017	EPA 300.0	486562		
60247861004	FGD-4-063017	EPA 300.0	486575		
60247861005	DUP-063017	EPA 300.0	486562		
60247861005	DUP-063017	EPA 300.0	486575		



Sample Condition Upon Receipt



Client Name: westow Energy			
Courier: FedEx □ UPS □ VIA ☑ Clay □	PEX 🗆 ECI 🗆	Pace □ Xroads □	Client □ Other □
Tracking #: Pac	ce Shipping Label Used	d? Yes□ No□	
Custody Seal on Cooler/Box Present: Yes ✓ No □	Seals intact: Yes	S No □	
Packing Material: Bubble Wrap ☐ Bubble Bags I	□ Foam ́□	None 🗅 Oth	ner 🗆
Thermometer Used: T-266 / T(239) Type o	fice: Wet Blue No	ne /	
Cooler Temperature (°C): As-read 2.6/4.4 Corr. Fact	tor CF +2.9 CF +0.7 Correct	ted 3.0/4.6	Date and initials of person examining contents:
Temperature should be above freezing to 6°C			pr 7/1/17
Chain of Custody present:	Yes No N/A		
Chain of Custody relinquished:	Yes No N/A		
Samples arrived within holding time:	Yes □No □N/A		
Short Hold Time analyses (<72hr):	Yes □No □N/A	PH	
Rush Turn Around Time requested:	□Yes ☑No □N/A		
Sufficient volume:	Yes No N/A		
Correct containers used:	Yes No N/A		
Pace containers used:	Yes No N/A		
Containers intact:	Yes No NA		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ☑N/A		
Filtered volume received for dissolved tests?	□Yes □No ☑N/A		
Sample labels match COC: Date / time / ID / analyses	☐Yes ☐No ☐N/A		
Samples contain multiple phases? Matrix:	□Yes No □N/A		
Containers requiring pH preservation in compliance?	ZYes □No □N/A		
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	/		
Cyanide water sample checks:			
Lead acetate strip turns dark? (Record only)	□Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:	□Yes □No ☑N/A		
Headspace in VOA vials (>6mm):	□Yes □No □N/A		
Samples from USDA Regulated Area: State:	□Yes □No ☑N/A		
Additional labels attached to 5035A / TX1005 vials in the field	? □Yes □No ☑N/A		
Client Notification/ Resolution: Copy COC t	o Client? Y N	Field Data Required	? Y / N
Person Contacted: Date/	Гіте:		
Comments/ Resolution:	·		
		1=1=	
Project Manager Review:	Date	e: <u>713 17 </u>	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	Client Information:		Section B Required P	roject I								e Infon	matio		10							1					Pa	ige:		of)		
company	westar en	ERGY	Report To:								Attenti			red N			IED.	01/		_													\neg
ddress:	818 Kansas A		Сору То:	Jared	Moi	rrison, He	eath Horn	nya				any Na	ame:			R EN						_	_		_	GENCY	_						
	Topeka, KS (66612									Addre			SEE	SE	CTIC	N A					F	NPE	DES		GROUI	ND W	VATER				VATER	
mail To	brandon.l.griff	fin@westarenergy.com	Purchase 0	rder No	0_:						Pace C Refere	nce:											UST	r	П	RCRA		- 12	<u></u>	OTHE	R	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
hone:	(785) 575-8135	Fax:	Project Nam	ne: ,	JEC	CCR Gro	oundwate	er			Pace P Manag	er.		eathe		lson,	913	-563	-140	7		Sit	e Lo	catio	3	KS							
Request	ed Due Date/TAT:	7 DAY	Project Nun	nber:							Pace P	rofile #	^{#:} 96	357,	1							12	S	TATE				- 1					
			*							\equiv								Ė	Re	que	sted	Anal	lysis	Filte	red	(Y/N)							
	Section D Required Client Information	Valid Matrix	Codes CODE	lo left)	MP)		COLL	ECTED					Pr	esen	/ative	es		X/N															
ITEM#	SAMPL (A-Z, 0-9) Sample IDs MUST	DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR () OTHER	R DW WT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPC STAR	OSITE	COMPO END/GF	SITE RAB	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	HCI	NaOH	Methanol	Other	Analysis Test	Total	200.8 Total Merchay	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	277			Residual Chlorine (Y/N)	Pac	e Proje	ect No	./ Lab I.D	
	FI O. I	-DEDAIT		レイ	_	DATE	TIME	(/29	1535		4	1	3			+=	H	=	N I	4 6	1 65			-	\vdash		Н		Blow	_			\neg
1	F60-1	-062917 -063017			6			6/30	0817	1	4	d	3	_		1	H	ŀ				\sqcap	\dashv				П		1	1			
2	FGD -3-	063017		w7	-			6/30	0938	+	4	1				\top	H		7	\top	Т				1		П						\neg
3	FGD - 4	063017		w				6/30	1058		4	-	-	a			Ħ					\Box							+	1	r		
4	100-9	00301/										Ħ				T	П		T		T												
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11								4																		$\perp \perp$		Ш					
12																									_								
T I	ADDITION	AL COMMENTS	THE PERSON	RELI	NQUI	SHED BY	AFFILIAT	ION	DAT	E		TIME				19 DE					ON	100	D	ATE		TIME			SAM	IPLE CO	NDITIC	NS	
*200.7	Total Metals: Ba, Be, B,	Ca, Cr, Pb, Li	13	12	19	/n	resta	1	6/30	0/17	11	500			1/	M	y	12	45	_			7/	1//	2 1	900	3	-0	1		+	Y	
**200.8	Total Metals: Co, As, S	e, Mo, Cd, Sb, Tl		1		1								1										1.77				1.6	X	7	2	¥	
																											1		/			-	
																														Ļ			
	Page						SAMPL	ER NAME	AND SIGN	UTA	RE												=18	Н		15.7		ပ္	5 7	ealed	€	ntacl	
	41 of							PRINT Na	ne of SAM	PLER		B	160	de	n	Gri	ffi	4	DA	TE S	igned	-1	1				-	remp in °C	Received on Ice (Y/N)	Custody Sealed	ooler ()	Samples Intact (Y/N)	
	of 43							SIGNATUI	RE of SAM	PLER	1	1/2	1	7							/YY):	06	13	0/	1/				αž	Sno	Ö	Sal	

Chain of Custody



THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	rkorder: 60247861	Workorder	Name:JEC CC		/ATER		(Owner	Rece	eived	Date	: 7/1/2017	Results Req	uncted Bu	. 7/00/0047
	ort To strangericheteriorgenie	etilektyttaaptilgageer	Subcontra	ict To				A (gg) yakan	(Maringa)	41 (Ba)	anan din		ed Analysis	dested by	: 7/26/2017
Pace 9608 Lene	ther Wilson e Analytical Kansas 3 Loiret Blvd. exa, KS 66219 ne 1(913)563-1407		1638 Suite: Greei	Analytical Pittsk Roseytown Roa s 2,3, & 4 nsburg, PA 156 e (724)850-5600	ad 0 01	Pre	sener	d Contai		Radíum-228	-226 & Total Radium		#:3022	3451	
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3	SELVE	u Contai	mers		Radium	30223			LADUAT ONLY
1	FGD-1-062917	PS	6/29/2017 15:35	60247861001	Water	2	-			$\frac{1}{x}$	x				LAB USE ONLY
2	FGD-2-063017	PS	6/30/2017 08:17	60247861002	Water	2	_			$\frac{1}{x}$	 \hat{x}				<u> 201</u>
3	FGD-3-063017	PS	6/30/2017 09:38	60247861003	Water	2		++		$\frac{1}{x}$	$\frac{1}{x}$				002_
4	FGD-4-063017	PS	6/30/2017 10:58	60247861004	Water	2				$\frac{1}{x}$	$\frac{1}{x}$				003_
5	DUP-063017	PS	6/30/2017 06:00	60247861005	Water	2		+		$\frac{1}{x}$	$\frac{1}{x}$		 		004_
					lus nittavautoras		Havrold le st			1^	1^_		Comment		<u> </u>
Trans	fers Released By	NII-	Date/Time	Received E	Ву	/	_	D	ate/Tin	ne				→ engine magnipagi →	An Artistiania ilavital Circi _{st} o
2			7/5/17-17	too Oph	bho	MF	010	7 -	7-6	-17	109	50			
2		***************************************				1				j					
٥	lor Tompovetius	eceipt M/				-]			_	
	ler Temperature on Re	1	Cus Cus	tody Seal Y	or N	<u> </u>	I	Receiv	ed or	ı Ice	Υ	or(N)	Samples	Intack	or N

^{**}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

•	Tiple Condition Opon Receipt Pittspurgn						30223451		
Pace Analytical Client Name:		_	oce	<u>, </u>	<u> </u>		Project #		
Courier: Fed Ex UPS USPS Click Tracking #: 7285 6593 780 Custody Seal on Cooler/Box Present: Vyes Thermometer Used	9 <u>5</u>	bomm — no	erciai	 ils inta	Pace Othe	/es	no	Label ANL	
Cooler Temperature Observed Temp Temp should be above freezing to 6°C	STATE OF THE PARTY	" C 	Cor	rectio	n Factor <u>:</u>	•	°C Final	Temp: °C	
Comments:	Yes	No	N/A	\			Date and content	Initials of person examining	
Chain of Custody Present:	X			1.					
Chain of Custody Filled Out:	X			2.					
Chain of Custody Relinquished:	X		1	3.					
Sampler Name & Signature on COC:	Ť	X	1	4,					
Sample Labels match COC:	X		 	5.					
-Includes date/time/ID Matrix:	NT	4		1					
Samples Arrived within Hold Time:	X		T	6.			-1		
Short Hold Time Analysis (<72hr remaining):	-	X		7.					
Rush Turn Around Time Requested:		X		8.					
Sufficient Volume:	X	'		9.					
Correct Containers Used:	X			10.		· <u></u>			
-Pace Containers Used:	X								
Containers Intact:	X			11.				· · · · · · · · · · · · · · · · · · ·	
Orthophosphate field filtered			X	12.	,				
Organic Samples checked for dechlorination:			X	13.					
Filtered volume received for Dissolved tests			X	14.					
All containers have been checked for preservation.	X			15.					
All containers needing preservation are found to be in compliance with EPA recommendation.	X	-			PHI				
exceptions: VOA, coliform, TOC, O&G, Phenolics				compl	when () () eted () () of added vative	7B	Date/time of preservation		
leadspace in VOA Vials (>6mm):			7	16,					
rip Blank Present:		X		17.					
Frip Blank Custody Seals Present		`	X						
Rad Aqueous Samples Screened > 0.5 mrem/hr		M		nitiai v comple	1 1 1 7 7 1	R	Date: 7-4-1)	
lient Notification/ Resolution:	<u> </u>	<u> </u>					<u> </u>	<u> </u>	
Person Contacted: Date/Time:							Contacte	d Bv:	
Comments/ Resolution:				-					

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

ATTACHMENT 2 Groundwater Potentiometric Maps

