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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

Bottom Ash Area 1 Impoundment/Bottom Ash Area 1 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 multi-unit groundwater monitoring system for the Bottom Ash (BA) Area 1 Impoundment/BA Area 1 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 BA Area 1 Impoundment/BA Area 1 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

M. D. N.



2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT BA AREA 1 IMPOUNDMENT/BA AREA 1 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 Bottom Ash Area 1 Impoundment/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 Bottom Ash (BA) Area 1 Impoundment/BA Area 1 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). These units are managed by a multi-unit groundwater monitoring system.

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 BA Area 1 Impoundment/BA Area 1 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 BA Area 1 Impoundment/BA Area 1 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 BA Area 1 Impoundment/BA Area 1 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 the BA Area 1 Impoundment/BA Area 1 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 BA Area 1 Impoundment/BA Area 1 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 BA Area 1 Impoundment/BA Area 1 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)].



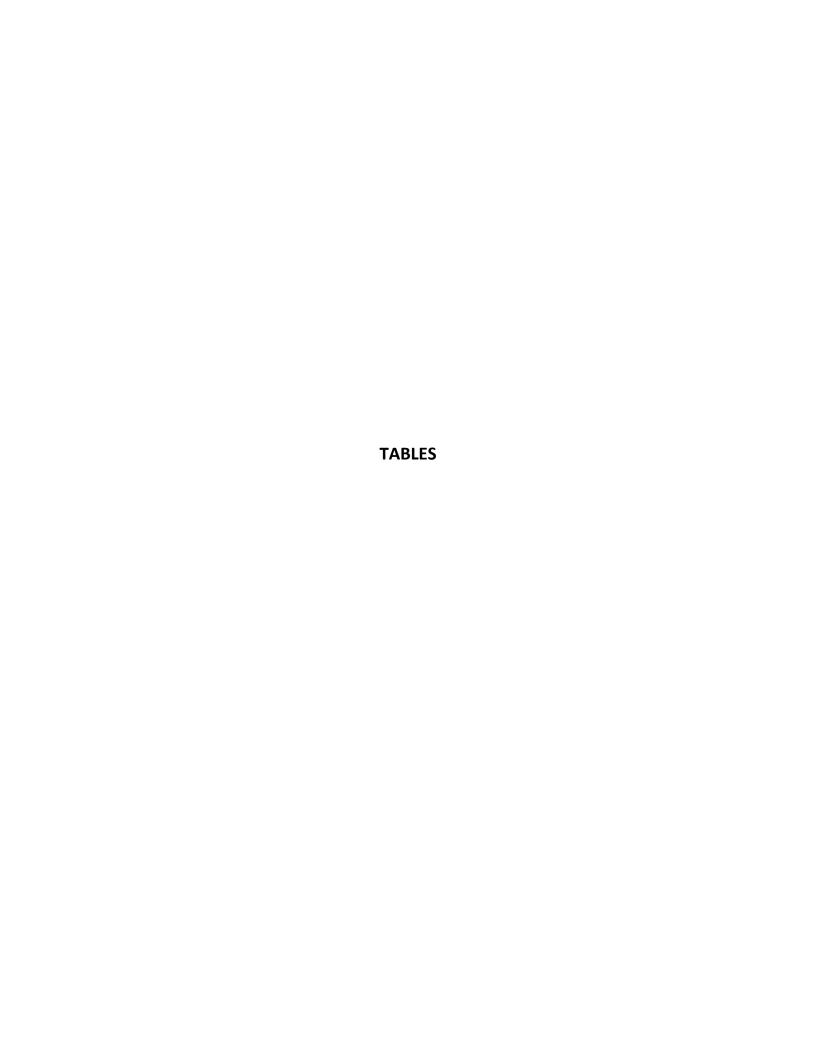


TABLE I

SUMMARY OF ANALYTICAL RESULTS

Westar Jeffrey Energy Center Bottom Ash Area 1 Impoundment/Bottom Ash Area 1 Landfill St. Marys, Kansas

		Measure			Depth to Water	Groundwater		Field Paramete	ers				USEPA Appen	dix III Consti	tuents (mg/L)								USEPA App	pendix IV Consti	tuents (mg/L)							USEPA Appendix IV Constituents (pCi/L)
Lo	ocation	Elevation (TOC)	Sample Name	Sample Date	(btoc)	Elevation (ft AMSL)	Temperature (Deg C)	Conductivity (µS/cm)	Turbidity (NTU)		oron, (Calcium, Total	Chloride	Fluoride	Sulfate	pH (su)	TDS	Antimony, Total	Arsenic, Total	Barium, Total	Beryllium, Total	Cadmium, Total	Chromium, Total	Cobalt, Total	Lead, Total	Lithium, Total	Molybdenum, Total	Selenium, Total	Thallium, Total	Mercury, Total	Fluoride	Radium-226 & 228 Combined
			BAA6-082516	8/25/2016	81.43	1220.38	17.59	4280	269		5.8	495	288	0.88	1790	7.1	3210	<0.0010	0.0037	0.039	< 0.0010	<0.00050	0.0060	0.0016	<0.0050	0.16	0.0090	<0.0010	< 0.0010	<0.00020	0.88	4.69
			BAA6-092216	9/22/2016	81.56	1220.25	17.25	3760	35.1	6.99	4.0	478	233	0.51	1840	7.1	3330	< 0.0010	0.0013	0.022	< 0.0010	< 0.00050	< 0.0050	0.0012	< 0.0050	0.10	0.0065	< 0.0010	< 0.0010	< 0.00020	0.51	3.08
ent			BAA-6-110316	11/3/2016	80.95	1220.86	14.39	3810	6.50	6.96	3.8	513	183	0.62	2070	7.1	3220	< 0.0010	0.0012	0.021	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.095	0.0059	< 0.0010	< 0.0010	< 0.00020	0.62	1.87
adi	MW-BAA-6	1301.81	BAA-6-121916	12/19/2016	81.10	1220.71	11.43	2750	32.6	6.36	1.7	358	195	0.60	1090	7.2	2080	< 0.0010	0.0013	0.037	< 0.0010	< 0.00050	< 0.0050	0.0020	< 0.0050	0.059	0.0061	0.0013	< 0.0010	< 0.00020	0.60	1.83
- 5	WW BAA 0	1301.01	BAA-6-020817	2/8/2017	81.20	1220.61	12.90	3610	8.0	6.94	3.0	506	207	0.62	1710	7.2	3110	< 0.0010	0.0014	0.020	< 0.0010	< 0.00050	< 0.0050	0.0011	< 0.0050	0.074	0.0047	< 0.0010	< 0.0010	< 0.00020	0.62	3.44
a d			BAA-6-041017	4/10/2017	79.34	1222.47	14.65	3820	6.6	6.84	3.4	551	215	0.72	1860	6.9	3430	< 0.0010	0.0014	0.019	<0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.081	0.0044	< 0.0010	< 0.0010	< 0.00020	0.72	2.64
			BAA-6-052617	5/26/2017	79.66	1222.15	15.20	3860	4.1	6.77	2.8	518	204	0.76	1830	6.9	3280	< 0.0010	0.0012	0.018	< 0.0010	<0.00050	< 0.0050	< 0.0010	< 0.0050	0.059	0.0036	<0.0010	< 0.0010	<0.00020	0.76	3.12
			BAA-6-062917	6/29/2017	80.57	1221.24	15.89	3730	3.3	6.82	2.6	515	215	0.35	1670	6.8	3140	<0.0010	0.0016	0.019	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.056	0.0031	<0.0010	<0.0010	<0.00020	0.35	3.64
			BAA2-082516	8/25/2016	14.42	1212.14	18.25	2070	6.2	8.10	1.3	224	163	0.44	783	7.3	1510	< 0.0010	0.0059	0.067	< 0.0010	<0.00050	<0.0050	< 0.0010	<0.0050	0.013	0.051	<0.0010	< 0.0010	<0.00020	0.44	1.81
			BAA2-092216	9/22/2016	14.24	1212.32	18.22	1510	4.8	7.26	1.0	181	133	0.52	658	7.5	1340	< 0.0010	0.0055	0.053	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.020	0.041	<0.0010	< 0.0010	< 0.00020	0.52	1.42
			BAA-2-110316	11/3/2016	13.99	1212.57	16.39	1319	4.0	7.03	1.1	188	137	0.51	983	7.5	1360	< 0.0010	0.0062	0.055	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.020	0.044	< 0.0010	< 0.0010	<0.00020	0.51	1.32
	MW-BAA-2	1226.56	BAA-2-122016	12/20/2016	14.14	1212.42	14.39	1293	6.4	7.09	1.0	181	110	0.51	604	7.4	1180	< 0.0010	0.0056	0.055	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.027	0.032	< 0.0010	< 0.0010	< 0.00020	0.51	1.87
	WW DAA 2	1220.30	BAA-2-020917	2/9/2017	14.03	1212.53	13.19	1204	4.6	6.94).92	172	103	0.50	570	7.5	1170	< 0.0010	0.0045	0.049	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.021	0.031	< 0.0010	< 0.0010	< 0.00020	0.50	0.945
			BAA-2-041017	4/10/2017	13.53	1213.03	16.03	1274	3.8	7.15	0.90	165	95.3	0.57	536	7.2	1150	< 0.0010	0.0027	0.043	<0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.023	0.026	< 0.0010	< 0.0010	< 0.00020	0.57	1.85
			BAA-2-052617	5/26/2017	13.74	1212.82	16.95	1820	3.9	7.09	1.2	195	144	0.49	769	7.4	1380	< 0.0010	0.0053	0.042	< 0.0010	<0.00050	< 0.0050	< 0.0010	< 0.0050	0.012	0.047	<0.0010	< 0.0010	<0.00020	0.49	2.41
			BAA-2-062917	6/29/2017	14.42	1212.14	17.86	1348	2.7	7.13).99	155	115	0.44	591	7.3	1180	<0.0010	0.0049	0.040	<0.0010	<0.00050	<0.0050	< 0.0010	<0.0050	0.021	0.030	<0.0010	<0.0010	<0.00020	0.44	2.34
			BAA3-082616	8/26/2016	13.62	1208.38	17.33	3550	158	7.81	2.4	526	146	0.97	1900	7.6	3250	< 0.0010	0.0022	0.050	< 0.0010	<0.00050	0.011	0.0013	<0.0050	0.10	0.0026	<0.0010	< 0.0010	<0.00020	0.97	3.00
i i			BAA3-092216	9/22/2016	13.75	1208.25	18.62	3570	92.0		2.3	496	154	1.0	2020	7.3	3110	< 0.0010	0.0014	0.025	< 0.0010	< 0.00050	< 0.0050	0.0010	< 0.0050	0.10	0.0031	<0.0010	< 0.0010	< 0.00020	1.0	2.34
ğ			BAA-3-110316	11/3/2016	12.25	1209.75	17.26	3300	48.2	6.85	2.3	507	157	0.92	2290	7.1	3150	< 0.0010	< 0.0010	0.015	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.095	0.0023	<0.0010	< 0.0010	<0.00020	0.92	0.897
S ₂	MW-BAA-3	1222.00	BAA-3-122016	12/20/2016	13.17	1208.83	13.56	3550	98.3	7.09	2.3	537	158	0.82	1950	7.1	3200	< 0.0010	< 0.0010	0.019	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.10	0.0029	< 0.0010	< 0.0010	<0.00020	0.82	2.12
ž.		1222.00	BAA-3-020917	2/9/2017	12.62	1209.38	12.03	3570	41.6	6.96	2.1	519	156	0.86	2050	7.2	3380	< 0.0010	< 0.0010	0.011	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.083	0.0015	< 0.0010	< 0.0010	<0.00020	0.86	2.03
Do			BAA-3-041017	4/10/2017	9.88	1212.12	15.19	3660	27.8	6.92	2.3	539	157	1.0	2080	7.0	3630	< 0.0010	< 0.0010	0.0098	< 0.0010	< 0.00050	< 0.0050	< 0.0010	< 0.0050	0.089	0.0016	< 0.0010	< 0.0010	< 0.00020	1.0	2.13
			BAA-3-052617	5/26/2017	11.31	1210.69	16.70	3590	17.9	6.91	2.3	522	155	1.0	2130	7.2	3260	<0.0010	<0.0010	0.0076	< 0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.072	0.0015	<0.0010	<0.0010	<0.00020	1.0	1.60
			BAA-3-062917	6/29/2017	12.67	1209.33	17.49	3580	12.6	6.98	2.1	454	158	0.86	1940	7.1	3210	0.000062	0.0007	0.0074	0.0019	<0.00018	0.00087	0.00016	0.0034	0.087	0.0015	<0.000086	<0.00018	<0.000024	0.86	2.07
			BAA-7-061717	6/17/2017	19.05	1194.10	16.74	2070	9.1	7.53	0.79	260	98.5	0.64	859	7.1	1760	<0.0010	<0.0010	0.051	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.037	0.018	<0.0010	<0.0010	<0.00020	0.64	1.30
			BAA-7-071817 BAA-7-072717	7/18/2017	20.34 19.68	1192.81 1193.47	16.92 17.51	2580	3.4	7.35	1.3	235 256	190	0.73 0.90	927 912	7.3 7.4	1760 1790	<0.0010 <0.0010	<0.0010 <0.0010	0.041	<0.0010 <0.0010	<0.00050 <0.00050	<0.0050 <0.0050	0.0011 0.0013	<0.0050	0.011 0.013	0.062 0.063	<0.0010	<0.0010 <0.0010	<0.00020	0.73 0.90	1.49 0.748
			BAA-7-072/17 BAA-7-080117	7/27/2017	19.68	1193.47	17.51	2220	3.6 2.3	7.20	1.1	256	190	0.90	803	7.4	1730	<0.0010	<0.0010	0.037	<0.0010	<0.00050	<0.0050	0.0013	<0.0050	<0.013	0.063	<0.0010	<0.0010	<0.00020	0.90	1.16
	MW-BAA-7	1213.15	BAA-7-080117 BAA-7-080717	8/1/2017	19.05	1193.07	17.55	2540	2.6	6.96	1.3	223	187	0.79	923	7.4	1960	<0.0010	<0.0010	0.039	<0.0020	<0.00050	<0.010	0.0013	<0.0050	0.014	0.071	<0.0010	<0.0010	<0.00020	0.79	1.16
			BAA-7-080717 BAA-7-081617	8/16/2017	19.87	1193.28	17.82	2520	3.1	6.95	1.3	234	201	0.85	950	7.3	1840	<0.0010	<0.0010	0.034	<0.0010	<0.00050	<0.0050	0.0013	<0.0050	0.015	0.071	<0.0010	<0.0010	<0.00020	0.85	0.549
			BAA-7-082317	8/23/2017	19.55	1193.60	17.21	2520	2.8	6.86	1.3	230	199	0.78	926	7.3	1850	<0.0010	<0.0010	0.033	<0.0010	<0.00050	<0.0050	0.0013	<0.0050	0.012	0.074	<0.0010	<0.0010	<0.00020	0.78	1.09
			BAA-7-082817	8/28/2017	19.80	1193.35	18.28	2500	3.4	7.00	1.3	222	195	0.75	936	7.4	1760	<0.0010	<0.0010	0.033	<0.0010	<0.00050	<0.0050	0.0013	<0.0050	0.010	0.069	<0.0010	<0.0010	<0.00020	0.75	1.33

ABBREVIATIONS AND NOTES:

Bold value: Detection above laboratory reporting limit

USEPA. 2016. Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities. July 26. 40 CFR Part 257. https://www.epa.gov/coalash/coal-ash-rule

USEPA. 2016. Final Rule: Disposal of Coal Combustion Res

µS/cm = microSiemen per centimeter

bitoc = below top of casing

C = Celsius

CCR = coal combustion residuals

ft AMSL = feet above mean sea level

MCL = maximum contaminant level

mg/L = milligrams per liter

NA = not applicable

NTU = Nephelometric Turbidity Units

pc/L = picoCurie per liter

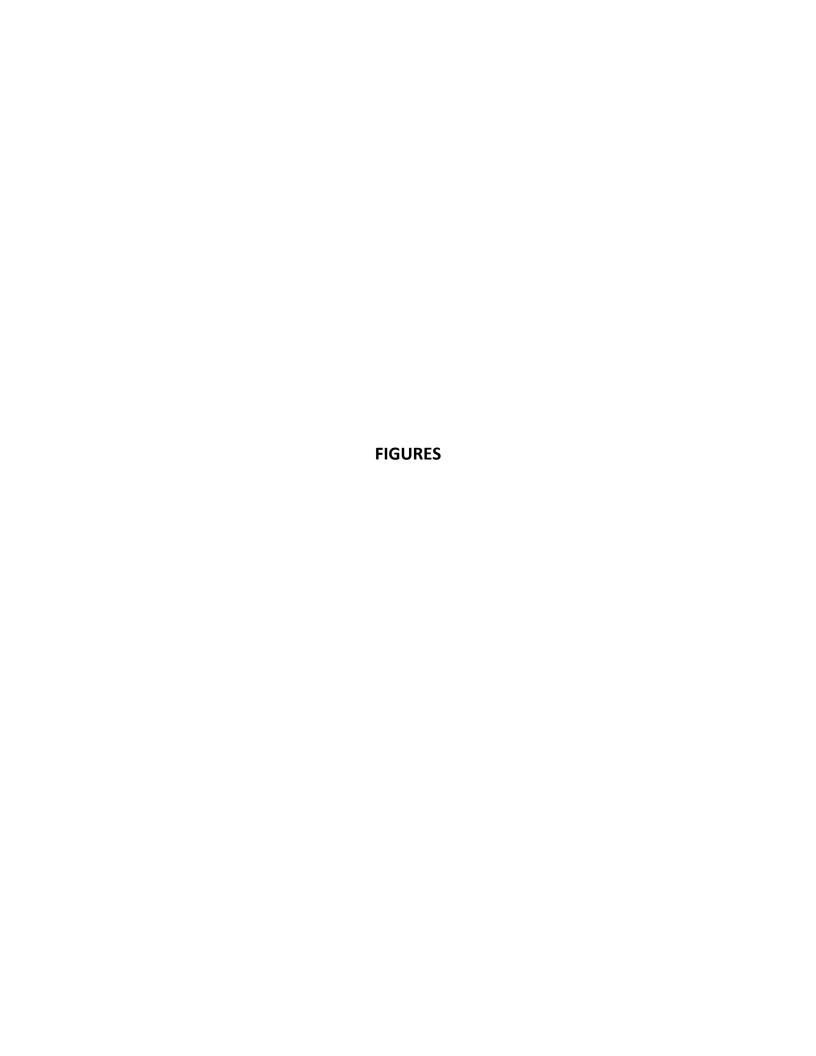
su = standard units

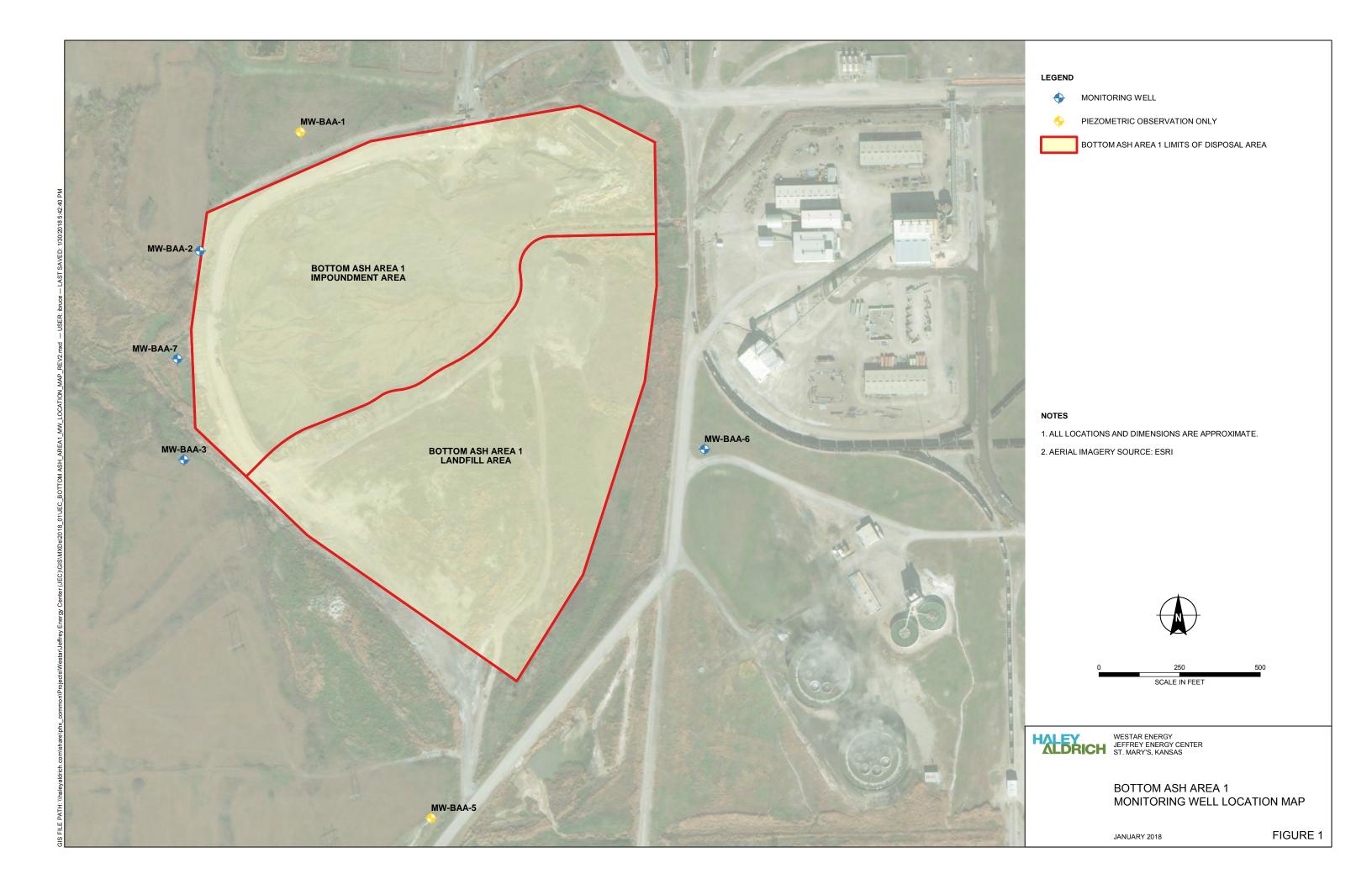
TDC = total dissolved solids

TOC = top of casing

USEPA = United States Environmental Protection Agency

January 2018 Table I_Westar_JEC_WQ Data Table_Bottom Ash Area 1 Landfill.xlsx







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

November 3, 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

Bottom Ash Settling Area/Bottom Ash Landfill

The Evergy Kansas Central, Inc. (Evergy) Bottom Ash Settling Area/Bottom Ash Landfill (BASA/BAL) 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 BASA/BAL 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 3, 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, June, July, and August 2017 are provided.
 - Groundwater sampling and analysis was completed at monitoring well MW-BAA-4 during baseline groundwater monitoring; however, the monitoring well was not included in the final certified network design established in October 2017. Therefore, MW-BAA-4 laboratory analytical data is included in many of these laboratory analytical reports.
 - 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 BASA/BAL.
- 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, June, and August 2017 are provided.



ATTACHMENT 1 Laboratory Analytical Reports

ATTACHMENT 1-1
August 2016 Sampling Event
Laboratory Analytical Report





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

JEC CCR GROUNDWATER Project:

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

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

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

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

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60226548

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C		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	26548001	Collected: 08/25/1	6 09:46	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	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	08/29/16 16:30	08/30/16 12:35	7439-92-1	
Lithium	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	
Γhallium, 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	26548002	Collected: 08/25/1	6 11:46	Received: 08	8/27/16 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	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		08/30/16 12:38	-	
Boron, Total Recoverable	0.30	mg/L	0.10	1	08/29/16 16:30	08/30/16 12:38	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	
ithium	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		
I500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-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 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	16984-48-8	
Sulfate	331	mg/L	50.0	50		09/08/16 22:38	14808-79-8	



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	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	0.039	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	09/01/16 11:12	7440-38-2	
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					
oH 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	0.0					
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	26548004	Collected: 08/26/1	6 10:58	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	hod: 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 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 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 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 11:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC .					
Total Dissolved Solids	3250	mg/L	5.0	1		08/31/16 08:31		
4500H+ pH, Electrometric	Analytical Met	hod: 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 Met	hod: 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	8/27/16 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	16984-48-8	
Sulfate	2310	mg/L	200	200		09/09/16 00:05	14808-79-8	



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	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	0.067	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			
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	
ithium	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 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 14:22	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	
Гhallium, 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 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 11:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1510	mg/L	5.0	1		08/31/16 08:28	;	
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		08/29/16 09:30)	H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.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	16984-48-8	
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</td>
 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

ParameterUnitsResultConc.Result% RecLimitsQualifiersMercuryug/L<0.20</td>53.87670-130

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.: 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

Parameter	Units	Blank Result	Reporting 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	mg/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	60226362001 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	

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

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	

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

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

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

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								
	60	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	

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.: 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

Lab 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	Analytical 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



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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: pVB/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:	√Yes □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 ØN/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	nation:					Section Invoice	on C Inform	nation:														Pa	ige:		of			
Company: WESTAR ENERGY	Report To: Br	andon	Griffin					Attenti	on:	Jar	ed M	orriso	on					1												2
Address: 818 Kansas Ave	Сору То: Ја	red Mc	rrison, He	eath Hori	nya			Compa	any Nar	me:	WES	TAR	ENE	RGY				RE	GÜ	LATO	DRY	AGE	NCY					B		
Topeka, KS 66612								Addres	ss:		SEE	SEC	TION	A				V	N	PDES	Г	GF	ROUN	N QN	VATER	₹ [DRINKIN	IG WA	TER	ı
Email To: brandon.l.griffin@westarenergy.com	Purchase Orde	r No.						Pace Q Referer										1-	U	ST	Г	RO	RA				OTHER	_		
Phone: (785) 575-8135 Fax:	Project Name:	JEC	CCR Gro	oundwate	er	_		Pace P Manage	roject	Hea	ather	Wils	on, 91	3-56	3-14	107		s	ite L	.ocati	on		1/0							ı
Requested Due Date/TAT: 7 DAY	Project Numbe	er.							rofile #:	965	57, 1									STAT	E:	_	KS		- 1					
Andrews III				4								_	_		R	eque	este	d Ana	alys	is Fil	tere	d (Y/I	N)							
Section D Required Client Information MATRIX DRINKING WATER	codes CODE DW	C=COMP)		COLL	ECTED		7			Pres	serva	atives		N /A			1													
SAMPLE ID (A-Z, 0-9 /,-) Sample IDs MUST BE UNIQUE ** WHE AIR OTHER TISSUE	OL S	MATRIA CODE (see valid codes to lett) SAMPLE TYPE (G=GRAB C=COMP)	COMPO		COMPOS END/GR	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	HNO ₃	HCI	NaOH Na ₂ S ₂ O ₃	Methanol	Analysis Test	200.7 Total Metals*	Total	245.1 Total Mercury	300.0 Cl, Fl, SO4 4500 H+B	2540C TDS	Radium 226	Radium 228				Residual Chlorine (Y/N)		2Z Project		48 Lab I.D.	
F(D 2 - D//2 C1/	_	76	DATE	THVL	8/25/6			ч	T	3													138	Pru	T ₁	BO2N2	20 20	PIN	20 as	Ì
2 FG04-082516		T 6			8/25/4	1147		4	I	3				1					1.				Ti			1		1	as	
3 BAA6 - 082516		76		5.0	8/25/16	1343		4	Í	3				1								(15)	11						as	1
4 BAA3-082616	V	TG			8/26/16	1058		4		3													1						my	1
5 BAA 4-082616		TG			8/26/16		7	4	1	3		9 6											1				_884	_	ar	1
6 BAA 2-082516	W	TG			8/25/4	1552		4		3													1			+		₹	06	4
7												9		13				4	1						\vdash					4
8				10		1 15					1			18				_	-						\sqcup		16			4
9				200		78			Ш		3				L		-	+	1				1	\vdash	\vdash		- 20			4
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11						P								1	L			1	+	-	\Box	_			H	_	-	-	WF	$\frac{1}{2}$
12 Dy P-082516	h	1 G	1*		8/25/16	0800	1	4	10	3			Ш	17		Ш		_	+			1	1	+		+	LE CON	<u> </u>		4
ADDITIONAL COMMENTS	F	RELINQL	JISHED BY	/ AFFILIA	TION	DAT	E		ПМЕ			A	CCEPT	ED BY	/ AF	FILIA	TION		-	DATI	-	П	-	1	-	SAME	LE CONI	RIION	S ~/	4
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	13	2	70/0	nest	e/	08/25	5/16	1	BOC	2	W	w	M	75	=	_			8	1/27	116	06	15	1/	7	1	7			4
**200.8 Total Metals Co, As, Se, Mo, Cd, Sb, Tl				-						1	7								, ,					1	8	1	7		X	
					100	-		. "		+1.	1	7			1		7			100							- 8			
70												7							T				77				long:			1
Page 4				SAMPI	LER NAME	AND SIGN	UTAN	RE		_							FY				36		1/2		0	5 (raled (N)	-	Itact	٦
45 of					PRINT Nar				ran	der	. (50	Th	^						1		4		7	Cemp in °C	Received on Ice (Y/N)	dy Se	2	Y/N)	
of 47	5			-	SIGNATUI				2	2					D (1	MM/D	Signe D/YY	ed 0	8/	26,	11	6			Ten	Rec	Custody Sealed Cooler (Y/IN)		Samples Intact · (Y/N)	

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

2

2

2

2

2

aller en la company			100g					Comments		
Transfers	Released By	Date/Time	Received	1	Date/Time					
1	Mas Va Ila	3/29/10 1700	Ben Mall	AM	8-30-16 8:	50				
2	I JULI VON 18	1 1								
3							A		\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

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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:	-			4.
Sample Labels match COC:	/			5.
-Includes date/time/ID/Analysis Matrix:	In	74		
Samples Arrived within Hold Time:				6.
Short Hold Time Analysis (<72hr remaining):		1	1	7.
Rush Turn Around Time Requested:		/		8.
		1	<u> </u>	9.
Sufficient Volume:		-		10.
Correct Containers Used:				10.
-Pace Containers Used:		<u> </u>		44
Containers Intact:	-		-	11.
Filtered volume received for Dissolved tests All containers needing preservation have been checked.		 		12.
				13. Dh. D
All containers needing preservation are found to be in				1102
compliance with EPA recommendation.	L	.L	L	Initial when Di M Date/time of
exceptions: VOA, coliform, TOC, O&G, Phenolics				completed SUTT preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			6	14.
Trip Blank Present:				15.
Trip Blank Custody Seals Present			1	
Rad Aqueous Samples Screened > 0.5 mrem/hr		/		Initial when completed: BIM 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

_ab 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
0228378002	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
0228378004	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
0228378005	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.



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	09/27/16 15:20	09/30/16 16:00	7440-70-2	M1
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:00	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:00	7439-92-1	
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	0.0					
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 Me	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	09/30/16 16:17	7440-47-3	
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 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 22:16	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	10/12/16 22:16	7782-49-2	
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 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 09:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1340	mg/L	5.0	1		09/26/16 16:05		
4500H+ pH, Electrometric	Analytical Me	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 Me	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 Met	hod: 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		
_ithium	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 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 22:20	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 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 09:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC					
Total Dissolved Solids	507	mg/L	5.0	1		09/26/16 16:05		
4500H+ pH, Electrometric	Analytical Met	hod: 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 Met	hod: 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	09/27/16 15:20			
Calcium, Total Recoverable	395	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	0.082	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			
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	C					
Total Dissolved Solids	2560	mg/L	5.0	1		09/26/16 16:06		
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					
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	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.: 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 W.S.	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



/			n /
Client Name: wstar Energy			
Courier: FedEx UPS VIA Clay Clay	PEX 🗆 ECI 🗆	Pace □ Xroads □ Clie	ent Other
Tracking #: P.	ace Shipping Label Used	ng? Yes □ Nor 🗇	
Custody Seal on Cooler/Box Present: Yes 🗀 No 🗆	Seals intact: Yes	l 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 2-3/1-6 Corr. Fa	ctor CF-0.1 Correct		te and initials of person amining contents:
Temperature should be above freezing to 6°C		277	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	PH	
	□Yes ☑No □N/A	7//	
Rush Turn Around Time requested:	1		
Sufficient volume:	ØYes □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 ØN/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 ∕ No □N/A		
Containers requiring pH preservation in compliance?	Yes ONo ON/A		
(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		
	□Yes □No □M/A		
Trip Blank present:			
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			
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	9/23/110	
		11 11	



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A	Client Information:	Section B Required P		forma	ation:					Sect		C ormati	on:														Page:	l		of (14
Company:	WESTAR ENERGY	Report To:	Brand	on G	Griffin					Atten	ition:	J	ared	Mor	risor	1																
Address: .	- 818 Kansas Ave	Copy To: Jared Morrison, Heath Hornya								Comp	Company Name: WESTAR ENERGY										RE	REGULATORY AGENCY										
	Topeka, KS 66612									Address: SEE SECTION A										₩ NPDES F GROUND WATER F DRINKING WATER								VATER				
Email To:	brandon.l.griffin@westarenergy.com	m Purchase Order No.:							Pace Quote										1-	UST FRCRA FOTHER												
	785) 575-8135 Fax:	Project Name: JEC CCR Groundwater								Reference: Pace Project Heather Wilson, 913-563-1407											Site Location											
` ·	d Due Date/TAT: 7 DAY	Project Number:							Manager: Pace Profile #: 9657, 1										STATE: KS					KS								
roduooro			-	-		-	-		-	-	-	-			_	-		R	eaue	ester	i Ána		is Filt	500	(Y/N	4)	1//					
				T		_			Т		T		_				Ţ	T	7		T					ĺΠ	-///					
Section D . Valid Matrix Codes Required Client Information MATRIX CO			CODE COMPOSITE					ECTED			Preservatives				N /A									Ц								
ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE AR OTHER TISSUE	DW WT WW P SL OL WP AR OT TS	CODE (see valid of	SAMPLE TYPE (G=GRAB C=C	COMPOSTAR		COMPOSEND/GF	SITE RAB	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	HNO ₃	NaOH	Na ₂ S ₂ O ₃	Methanol	∦Analysis Test	7 Total	200.8 Total Metals**	245.1 Total Mercury		2540C TDS	Radium 226	Kadium 228		1	Residual Chlorine (Y/N)	GO Pa		937 :		.D.
	BAA6-092216		WT	_	DATE	THE	9/22	0826	_	4	T	_	3	T		T					1	1		_	3721		\top	1302	NZ-	° 28	DIN	W
1 2	BAA4-092216		A CONTRACTOR OF THE PARTY OF TH	6			9/22	6955		Ч	-	1	3											1	1			1				102
3	BAA 3-0922/6			5			9/22	1103	1	4	T		3	T	T					8 F												103
4	BAA 2-092216			6		1	9/22	1225		4	1		3				1															24
5	FGD 1-892216	- 1	WT	_		7 8	9/22	1330	-	4	1		3				8								1		. A	1		,	,	C105
6	7 - 0 1 0 1 2 2 0	- 0				- 5			1			-81		1.				6														
7													7				8															=
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10						H	E						31				3											1				
11	6.5			A.			= "	1		F 9		0 E					3	¥.					1.4									
12	DUP-092216		WT	G			7/22	1800		14	1		3	4 5			13							1	凯	A	Ш	1882N	12-4	2891	N W	6
1	ADDITIONAL COMMENTS	1 10	RELIN	QUIS	SHED BY /	AFFILIAT	ION	DAT	Έ		TIME	172		1	ACC	EPTE	D BY	AFF	ILIAT	TION			DATE	.]	TIM	ΙE		SA	MPLE	CONDITIC	NS	
*200.7 To	otal Metals: Ba, Be, B, Ca, Cr, Pb, Li	13	V	V	/w	esp	/	9/201	16	14	120	0	11	In	W.	m	151	-	=	1.6		91	23/	16	060	-5-	3.4	y		Y	Y	
**200,8 T	otal Metals: Co, As, Se, Mo, Cd, Sb, Tl	/	1			-/-	-		42				7	V	- 6			Т				121	1	7	ं		2.7	7	1	Y	V	,
7 18	D		311	-		-1	100	-	_		-				-	H	7	÷				+	-	1					+			
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Tage						_					_				_						7	1					-	-	+	D	- -	
e 47						SAMPL	ER NAME		_				(C)			1 6	_					ΛÜ					ပ္စ	uo p		Seale (Y/N)	Intak	2
9							PRINT Nar	ne of SAM	PLER	B	14	nd	9	_(2r	14	Gir	P	ATE 4	Sign:	d a				111		Temp in	Received on		Custody Sealed Cooler (Y/N)	Samples Intact	(3.7
43	3						SIGNATUR	RE of SAM	PLER	1	52	Y	19					(1	MM/D	D/YY)	d	1/	22	/	16		<u> </u>	%	\perp	Sno One	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.

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
60231627012	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 Met	thod: EPA 200	0.7 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	
_ithium	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 Met	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 17:09	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 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 12:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	oc					
Total Dissolved Solids	947	mg/L	5.0	1		11/09/16 11:32		
4500H+ pH, Electrometric	Analytical Met	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 Met	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	31627009	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	0.7 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	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 17:23	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	3 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	ļ.	
1500H+ 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	231627014	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	thod: EPA 200	0.7 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	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	11/08/16 09:00			
ithium	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	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 17:44	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	
45.1 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 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC .					
Total Dissolved Solids	3160	mg/L	5.0	1		11/09/16 11:38		
1500H+ pH, Electrometric	Analytical Met	thod: SM 4500	0-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		11/12/16 11:00		H6
800.0 IC Anions 28 Days	Analytical Met	thod: 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						
		60231627002	Spike	MS	MS	% Rec	
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

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.: 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

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.: 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.



QUALITY CONTROL DATA

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

Calculation

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



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 $1.30 \pm 1.02 (1.49)$ 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

(913)599-5665



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.

(913)599-5665



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	Analytica 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		
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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		
60231627013	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		
60231627002	BAA-2-110316	EPA 300.0	456713		
60231627002	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 /. 1/1.8/2-9/2 / 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:	x
Sufficient volume:	Λ
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?	
Sample labels match COC: Date / time / ID / analyses	FAA-4 collected @ 092V
Samples contain multiple phases? Matrix: & T ☐Yes █No ☐N/A	A
Containers requiring pH preservation in compliance? ✓ 🗸 🖂 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒 🖒	A
(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/	A
Headspace in VOA vials (>6mm): □Yes □No ØN/	Α
Samples from USDA Regulated Area: State: □Yes □No ZN/A	Α
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.



Samp	Custody Sealed Cooler (Y/N)	Rece	Tem	- 5	11/	40	/11	(XX):	S ETA				K	1	100	5	W	_	JAMAS to 3					1						of 66	
nples Inta (Y/N)	y Seale	Received on Ice (Y/N)	Temp in °C		59 E (e in		e, Use		-	15	1	_	TO I	71	- 3	~~	_	TANDIS DIV.			- i -								ge 63	
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. Lab I.D.	-29 152	Pace P	Residual Chlorine		Radium 228	Radium 226	4500 H+B	300.0 Ci, FI, SO4	200.8 Total Metals**	Tota	LAnalysis Test	Methanol Other	Na ₂ S ₂ O ₃	NaOH	HNO ₃	H ₂ SO ₄	# OF CONTAINERS	SAMPLE TEMP AT C		DATE	BMIT	3TAQ	SAMPLE TYPE (G=	CODE	9W ЯА ТО 8T	3	9I∖v ЯIA HTO	(-",	LAMA2 (A-2, C-9, A-9) TSUM 201 910m	≅S	ITEM#
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Workorder Name: JEC CCR GROUNDWATER

Workorder: 60231627

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Custody Seal (Yor

Received on Ice

Cooler Temperature on Receipt √ \ \ ∪

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Face Analytical

Samples Intact or

Sample Condi	ition Upon Rece	ipt F	'itts:	ourg	n	
Pace Analytical	Client Name:	Pe	rce	Kei	n.sas	Project # 30 2 0 1 8 9
Courier: Fed Ex Tracking #:	1454 1954		_			
Custody Seal on Cooler/E					s intact: yes	□ no
Thermometer Used	<u> </u>				t Blue (None)	A °C Final Tamp: A / \A. °C
•	Observed Temp	V+	-	Corr	ection Factor <u>: MV</u>	4 °C Final Temp: NVA °C
Temp should be above freezing	ng to 6°C					Date and Initials of person examining contents:
Commenta		Yes	No	N/A	7	contents: KH 11-8-14
Comments:		1	110	1	1.	
Chain of Custody Present:	1.	1			2.	
Chain of Custody Filled Ou		1		-		
Chain of Custody Relinquis				-	3.	
Sampler Name & Signature		ļ,		 	4.	
Sample Labels match COC		<u> </u>		L	5.	
-Includes date/time/ID/A	nalysis Matrix: W	1	r	T		
Samples Arrived within Hole	d Time:	/			6.	
Short Hold Time Analysis	(<72hr remaining):		<u> </u>		7.	
Rush Turn Around Time F	Requested:	,	<u> </u>		8.	
Sufficient Volume:					9.	
Correct Containers Used:		<u> </u>			10.	
-Pace Containers Used:						
Containers Intact:					11.	
Filtered volume received for				1	12.	
All containers needing preservation	on have been checked.	V			13.PH LZ	
All containers needing preserva compliance with EPA recomme		✓			•	
exceptions: VOA, coliform,	, TOC, O&G, Phenolics				Initial when	Date/time of preservation
					Lot # of added preservative	
Headspace in VOA Vials (>	-6ṁm):			1	14.	
Trip Blank Present:				/	15.	
Trip Blank Custody Seals Pi	resent			1		
Rad Aqueous Samples Sc	reened > 0.5 mrem/hr		1		Initial when completed:	Date: 11-8-16
Client Notification/ Resolu	ution:	210000000000000000000000000000000000000				
	·			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 1-4
December 2016 Sampling Event
Laboratory Analytical Report



January 20, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on December 21, 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,

Atarbus 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.: 60234728

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.: 60234728

Lab ID	Sample ID	Matrix	Date Collected	Date Received	
60234728001	BAA-6-121916	Water	12/19/16 17:03	12/21/16 07:55	
60234728002	BAA-2-122016	Water	12/20/16 09:23	12/21/16 07:55	
60234728003	BAA-4-122016	Water	12/20/16 10:17	12/21/16 07:55	
60234728004	BAA-3-122016	Water	12/20/16 13:22	12/21/16 07:55	



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60234728001	BAA-6-121916	EPA 200.7	ZBM	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
60234728002	BAA-2-122016	EPA 200.7	ZBM	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
0234728003	BAA-4-122016	EPA 200.7	ZBM	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
0234728004	BAA-3-122016	EPA 200.7	ZBM	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

(913)599-5665



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: January 20, 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.

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: January 20, 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.

Additional Comments:

(913)599-5665



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: January 20, 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.

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Method: EPA 903.1

Description:903.1 Radium 226Client:WESTAR ENERGYDate:January 20, 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.: 60234728

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** January 20, 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.: 60234728

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:January 20, 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.: 60234728

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: January 20, 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.: 60234728

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: January 20, 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.

BAA-2-122016 (Lab ID: 60234728002)
BAA-3-122016 (Lab ID: 60234728004)
BAA-4-122016 (Lab ID: 60234728003)
BAA-6-121916 (Lab ID: 60234728001)

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.: 60234728

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: January 20, 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.: 60234728

Date: 01/20/2017 02:59 PM

Sample: BAA-6-121916	Lab ID: 602	234728001	Collected: 12/19/1	6 17:03	Received: 12	2/21/16 07:55 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	0.037	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:33	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:33	7440-41-7	
Boron, Total Recoverable	1.7	mg/L	0.10	1		12/28/16 13:33		
Calcium, Total Recoverable	358	mg/L	0.10	1		12/28/16 13:33		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		12/28/16 13:33		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		12/28/16 13:33		
Lithium	0.059	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:33	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	12/27/16 14:00	12/29/16 14:19	7440-36-0	
Arsenic, Total Recoverable	0.0013	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:19	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/27/16 14:00	12/29/16 14:19	7440-43-9	
Cobalt, Total Recoverable	0.0020	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:19	7440-48-4	
Molybdenum, Total Recoverable	0.0061	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:19	7439-98-7	
Selenium, Total Recoverable	0.0013	mg/L	0.0010	1		12/29/16 14:19		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:19	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	12/21/16 15:00	12/22/16 08:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	2080	mg/L	5.0	1		12/23/16 08:43		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		12/29/16 11:42		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	.0					
Chloride	195	mg/L	20.0	20		01/13/17 17:05	16887-00-6	
Fluoride	0.60	mg/L	0.20	1		01/11/17 15:54	16984-48-8	
Sulfate	1090	mg/L	100	100		01/13/17 17:19	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Date: 01/20/2017 02:59 PM

Sample: BAA-2-122016	Lab ID: 602	34728002	Collected: 12/20/1	6 09:23	Received: 12	/21/16 07:55 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	0.055	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:36	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:36	7440-41-7	
Boron, Total Recoverable	1.0	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:36	7440-42-8	
Calcium, Total Recoverable	181	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:36	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:36	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:36	7439-92-1	
ithium	0.027	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:36	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	12/27/16 14:00	12/29/16 14:23	7440-36-0	
Arsenic, Total Recoverable	0.0056	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:23	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/27/16 14:00	12/29/16 14:23	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:23	7440-48-4	
Molybdenum, Total Recoverable	0.032	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:23	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:23	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:23	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 24	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	12/21/16 15:00	12/22/16 08:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	1180	mg/L	5.0	1		12/23/16 08:52	2	
1500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		12/29/16 11:44		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	110	mg/L	10.0	10		01/13/17 17:32	16887-00-6	
Fluoride	0.51	mg/L	0.20	1		01/11/17 16:09	16984-48-8	
Sulfate	604	mg/L	50.0	50		01/13/17 17:46	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Date: 01/20/2017 02:59 PM

Sample: BAA-4-122016	Lab ID: 602	34728003	Collected: 12/20/1	6 10:17	Received: 12	/21/16 07:55	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	0.033	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:38	3 7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:38	3 7440-41-7	
Boron, Total Recoverable	0.93	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:38	3 7440-42-8	
Calcium, Total Recoverable	419	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:38	3 7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:38	3 7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:38	7439-92-1	
_ithium	0.018	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:38	3 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	12/27/16 14:00	12/29/16 14:28	3 7440-36-0	
Arsenic, Total Recoverable	0.0077	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:28	3 7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/27/16 14:00	12/29/16 14:28	3 7440-43-9	
Cobalt, Total Recoverable	0.029	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:28	3 7440-48-4	
Molybdenum, Total Recoverable	0.12	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:28	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:28	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:28	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	12/21/16 15:00	12/22/16 09:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	oc					
Total Dissolved Solids	3800	mg/L	5.0	1		12/23/16 08:53	3	
1500H+ pH, Electrometric	Analytical Met	hod: SM 4500	D-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		12/29/16 11:45	;	H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	175	mg/L	20.0	20		01/13/17 18:00	16887-00-6	
Fluoride	0.65	mg/L	0.20	1		01/11/17 16:25	16984-48-8	
Sulfate	2340	mg/L	200	200		01/13/17 18:14		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Date: 01/20/2017 02:59 PM

Sample: BAA-3-122016	Lab ID: 602	234728004	Collected: 12/20/1	6 13:22	Received: 12	2/21/16 07:55 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	0.019	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:40	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:40	7440-41-7	
Boron, Total Recoverable	2.3	mg/L	0.10	1		12/28/16 13:40		
Calcium, Total Recoverable	537	mg/L	0.10	1		12/28/16 13:40		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		12/28/16 13:40		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		12/28/16 13:40		
Lithium	0.10	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:40	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	12/27/16 14:00	12/29/16 14:32	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:32	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	12/27/16 14:00	12/29/16 14:32	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:32	7440-48-4	
Molybdenum, Total Recoverable	0.0029	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:32	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		12/29/16 14:32		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:32	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	12/21/16 15:00	12/22/16 09:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	С					
Total Dissolved Solids	3200	mg/L	5.0	1		12/23/16 08:54		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		12/29/16 11:46		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300.	.0					
Chloride	158	mg/L	20.0	20		01/13/17 18:28	16887-00-6	
Fluoride	0.82	mg/L	0.20	1		01/11/17 16:40	16984-48-8	
Sulfate	1950	mg/L	200	200		01/13/17 18:42	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Date: 01/20/2017 02:59 PM

QC Batch: 459920 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

METHOD BLANK: 1882906 Matrix: Water
Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 12/22/16 08:29

LABORATORY CONTROL SAMPLE: 1882907

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: 1882908 1882909

MS MSD 60234631003 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0057 70-130 20 Mercury mg/L .005 .005 0.0057 114 113

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

Pace Project No.: 60234728

QC Batch: 460236 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

METHOD BLANK: 1884140 Matrix: Water Associated Lab Samples:

60234728001, 60234728002, 60234728003, 60234728004

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	< 0.0050	0.0050	12/28/16 12:26	
Beryllium	mg/L	< 0.0010	0.0010	12/28/16 12:26	
Boron	mg/L	<0.10	0.10	12/28/16 12:26	
Calcium	mg/L	< 0.10	0.10	12/28/16 12:26	
Chromium	mg/L	< 0.0050	0.0050	12/28/16 12:26	
Lead	mg/L	< 0.0050	0.0050	12/28/16 12:26	
Lithium	mg/L	< 0.010	0.010	12/28/16 12:26	

LABORATORY CONTROL SAMPLE: 18	884141
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Date: 01/20/2017 02:59 PM

		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	104	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	0.98	98	85-115	
Lithium	mg/L	1	1.1	109	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLIC	ATE: 18841	42		1884143							
Parameter	Units	60234133003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.16	1	1	1.2	1.2	104	105	70-130	1	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	1.0	102	103	70-130	2	20	
Boron	mg/L	1.7	1	1	2.7	2.7	104	99	70-130	2	20	
Calcium	mg/L	254	10	10	266	262	113	83	70-130	1	20	
Chromium	mg/L	< 0.0050	1	1	0.96	0.96	96	96	70-130	0	20	
Lead	mg/L	< 0.0050	1	1	0.87	0.86	86	86	70-130	0	20	
Lithium	ma/L	0.21	1	1	1.3	1.3	112	114	70-130	1	20	

MATRIX SPIKE SAMPLE:	1884144						
		60234727003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.031	2	2.2	107	70-130	
Beryllium	mg/L	<0.0010	2	2.1	106	70-130	
Boron	mg/L	3.6	2	5.6	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.: 60234728

Date: 01/20/2017 02:59 PM

MATRIX SPIKE SAMPLE:	1884144						
Parameter	Units	60234727003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
					/0 IXEC		Qualifiers
Calcium	mg/L	291	20	317	128	70-130	
Chromium	mg/L	< 0.0050	2	2.0	98	70-130	
Lead	mg/L	< 0.0050	2	1.8	92	70-130	
Lithium	mg/L	0.016	2	2.3	116	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.: 60234728

Date: 01/20/2017 02:59 PM

QC Batch: 460439 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

METHOD BLANK: 1884750 Matrix: Water
Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	12/29/16 12:25	
Arsenic	mg/L	< 0.0010	0.0010	12/29/16 12:25	
Cadmium	mg/L	< 0.00050	0.00050	12/29/16 12:25	
Cobalt	mg/L	< 0.0010	0.0010	12/29/16 12:25	
Molybdenum	mg/L	< 0.0010	0.0010	12/29/16 12:25	
Selenium	mg/L	< 0.0010	0.0010	12/29/16 12:25	
Thallium	mg/L	< 0.0010	0.0010	12/29/16 12:25	

LABORATORY CONTROL SAMPLE:	1884751					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% 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	0.039	98	85-115	
Cobalt	mg/L	.04	0.038	96	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.040	101	85-115	
Thallium	mg/L	.04	0.038	94	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 18847	52		1884753							
			MS	MSD								
	6	60234844001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	4.2 ug/L	.04	.04	0.041	0.041	93	93	70-130	0	20	
Arsenic	mg/L	26.8 ug/L	.04	.04	0.062	0.061	88	85	70-130	2	20	
Cadmium	mg/L	<0.50 ug/L	.04	.04	0.033	0.034	82	84	70-130	2	20	
Cobalt	mg/L	1.4 ug/L	.04	.04	0.035	0.034	83	83	70-130	0	20	
Molybdenum	mg/L	35.9 ug/L	.04	.04	0.077	0.076	103	99	70-130	2	20	
Selenium	mg/L	6.5 ug/L	.04	.04	0.040	0.041	85	85	70-130	1	20	
Thallium	mg/L	<1.0 ug/L	.04	.04	0.035	0.035	86	86	70-130	0	20	

MATRIX SPIKE SAMPLE:	1884754						
		60234845001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<20.0 ug/L	.04	0.042	88	70-130	
Arsenic	mg/L	21.3 ug/L	.04	0.052	77	70-130	
Cadmium	mg/L	12.3 ug/L	.04	0.048	90	70-130	

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Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Date: 01/20/2017 02:59 PM

MATRIX SPIKE SAMPLE:	1884754						
Parameter	Units	60234845001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
- Farameter	Office	Resuit	Conc.	Result	76 KeC	LIIIIIIS	Qualifiers
Cobalt	mg/L	39.8 ug/L	.04	0.075	88	70-130	
Molybdenum	mg/L	156 ug/L	.04	0.20	105	70-130	
Selenium	mg/L	62.7 ug/L	.04	0.091	70	70-130	
Thallium	mg/L	<20.0 ug/L	.04	0.039	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.

Qualifiers



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

QC Batch: 460157 Analysis Method: SM 2540C

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

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

METHOD BLANK: 1883744 Matrix: Water
Associated Lab Samples: 60234728001, 60234728002, 60234728003, 6023472800

60234728001, 60234728002, 60234728003, 60234728004 Blank Reporting

Blank Reporting
Parameter Units Result Limit Analyzed

Total Dissolved Solids mg/L <5.0 5.0 12/23/16 08:37

LABORATORY CONTROL SAMPLE: 1883745

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 934 93 80-120

SAMPLE DUPLICATE: 1883746

60234727001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1150 3 **Total Dissolved Solids** 1180 10 mg/L

SAMPLE DUPLICATE: 1883747

Date: 01/20/2017 02:59 PM

60234723001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 538 **Total Dissolved Solids** mg/L 513 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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

QC Batch: 460624 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

SAMPLE DUPLICATE: 1885275

Date: 01/20/2017 02:59 PM

 Parameter
 Units
 60234727003 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.5
 7.5
 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.



JEC CCR GROUNDWATER Project:

Pace Project No.: 60234728

Date: 01/20/2017 02:59 PM

QC Batch: 461703 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

60234728001, 60234728002, 60234728003, 60234728004 Associated Lab Samples:

METHOD BLANK: 1889823 Matrix: Water Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

Blank

Reporting Limit Parameter Units Result

Qualifiers Analyzed Fluoride < 0.20 0.20 01/11/17 10:36 mg/L

LABORATORY CONTROL SAMPLE: 1889824

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.5 102 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1889825 1889826

MS MSD 60235399001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride ND 125 mg/L 125 132 132 105 106 80-120 0 15

MATRIX SPIKE SAMPLE: 1889827 MS 60235400001 Spike MS % Rec Parameter Units Result Conc. Result % Rec Limits Qualifiers ND 80-120 Fluoride mg/L 12.5 13.2 103

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.



JEC CCR GROUNDWATER Project:

Pace Project No.: 60234728

Chloride

Date: 01/20/2017 02:59 PM

Sulfate

QC Batch: 461949 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

60234728001, 60234728002, 60234728003, 60234728004 Associated Lab Samples:

METHOD BLANK: 1891083 Matrix: Water Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

Blank Reporting

Limit Qualifiers Parameter Units Result Analyzed <1.0 01/13/17 12:13 mg/L 1.0 mg/L <1.0 1.0 01/13/17 12:13

mg/L

LABORATORY CONTROL SAMPLE: 1891084 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.7 95 90-110 mg/L Sulfate 5 5.1 103 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1891085 1891086 MS MSD 60235060014 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 8.4 5 5 13.8 13.4 107 101 80-120 2 15 5 Sulfate mg/L 4.6 5 9.8 9.8 103 103 80-120 0 15

MATRIX SPIKE SAMPLE: 1891087 MS MS 60235060015 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride 12.3 5 17.9 113 80-120 mg/L 13.0 5 80-120 Sulfate mg/L 18.3 106

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.: 60234728

Sample: BAA-6-121916 Lab ID: 60234728001 Collected: 12/19/16 17:03 Received: 12/21/16 07:55 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.418 ± 0.593 (1.00) Radium-226 pCi/L 01/19/17 11:52 13982-63-3 C:NA T:95% EPA 904.0 1.41 ± 0.518 (0.731) Radium-228 pCi/L 01/19/17 11:36 15262-20-1 C:66% T:81% Total Radium Total Radium 1.83 ± 1.11 (1.73) pCi/L 01/20/17 11:59 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Sample: BAA-2-122016 PWS:	Lab ID: 602347 2 Site ID:	28002 Collected: 12/20/16 09:23 Sample Type:	Received:	12/21/16 07:55	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.658 ± 0.725 (1.16) C:NA T:88%	pCi/L	01/19/17 12:10	13982-63-3	
Radium-228	EPA 904.0	1.21 ± 0.589 (0.989) C:64% T:70%	pCi/L	01/19/17 12:25	5 15262-20-1	
Total Radium	Total Radium Calculation	1.87 ± 1.31 (2.15)	pCi/L	01/20/17 11:59	7440-14-4	



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60234728

Sample: BAA-4-122016 Lab ID: 60234728003 Collected: 12/20/16 10:17 Received: 12/21/16 07:55 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.0831 \pm 0.379 \quad (0.225)$ Radium-226 pCi/L 01/19/17 12:10 13982-63-3 C:NA T:89% EPA 904.0 $0.249 \pm 0.304 \quad (0.642)$ 01/19/17 11:36 15262-20-1 Radium-228 pCi/L C:78% T:87% Total Radium Total Radium $0.332 \pm 0.683 \quad (0.867)$ pCi/L 01/20/17 11:59 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

Sample: BAA-3-122016 Lab ID: 60234728004 Collected: 12/20/16 13:22 Received: 12/21/16 07:55 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 0.166 ± 0.565 (1.09) Radium-226 pCi/L 01/19/17 12:10 13982-63-3 C:NA T:90% EPA 904.0 1.95 ± 0.576 (0.588) 01/19/17 11:37 15262-20-1 Radium-228 pCi/L C:78% T:71% Total Radium Total Radium 2.12 ± 1.14 (1.68) pCi/L 01/20/17 11:59 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60234728

QC Batch: 245977 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

METHOD BLANK: 1209835 Matrix: Water

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

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

Radium-228 0.657 ± 0.382 (0.688) C:65% T:93% pCi/L 01/19/17 11:37

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.: 60234728

QC Batch: 245976 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

METHOD BLANK: 1209834 Matrix: Water

Associated Lab Samples: 60234728001, 60234728002, 60234728003, 60234728004

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

Radium-226 -0.078 ± 0.356 (0.840) C:NA T:94% pCi/L 01/19/17 11:14

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.: 60234728

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: 01/20/2017 02:59 PM

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.: 60234728

Date: 01/20/2017 02:59 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60234728001	BAA-6-121916	EPA 200.7	460236	EPA 200.7	460373
60234728002	BAA-2-122016	EPA 200.7	460236	EPA 200.7	460373
60234728003	BAA-4-122016	EPA 200.7	460236	EPA 200.7	460373
0234728004	BAA-3-122016	EPA 200.7	460236	EPA 200.7	460373
0234728001	BAA-6-121916	EPA 200.8	460439	EPA 200.8	460506
60234728002	BAA-2-122016	EPA 200.8	460439	EPA 200.8	460506
60234728003	BAA-4-122016	EPA 200.8	460439	EPA 200.8	460506
60234728004	BAA-3-122016	EPA 200.8	460439	EPA 200.8	460506
0234728001	BAA-6-121916	EPA 245.1	459920	EPA 245.1	459935
60234728002	BAA-2-122016	EPA 245.1	459920	EPA 245.1	459935
60234728003	BAA-4-122016	EPA 245.1	459920	EPA 245.1	459935
60234728004	BAA-3-122016	EPA 245.1	459920	EPA 245.1	459935
60234728001	BAA-6-121916	EPA 903.1	245976		
60234728002	BAA-2-122016	EPA 903.1	245976		
60234728003	BAA-4-122016	EPA 903.1	245976		
60234728004	BAA-3-122016	EPA 903.1	245976		
60234728001	BAA-6-121916	EPA 904.0	245977		
0234728002	BAA-2-122016	EPA 904.0	245977		
60234728003	BAA-4-122016	EPA 904.0	245977		
60234728004	BAA-3-122016	EPA 904.0	245977		
60234728001	BAA-6-121916	Total Radium Calculation	246983		
60234728002	BAA-2-122016	Total Radium Calculation	246983		
60234728003	BAA-4-122016	Total Radium Calculation	246983		
60234728004	BAA-3-122016	Total Radium Calculation	246983		
60234728001	BAA-6-121916	SM 2540C	460157		
60234728002	BAA-2-122016	SM 2540C	460157		
60234728003	BAA-4-122016	SM 2540C	460157		
60234728004	BAA-3-122016	SM 2540C	460157		
60234728001	BAA-6-121916	SM 4500-H+B	460624		
0234728002	BAA-2-122016	SM 4500-H+B	460624		
60234728003	BAA-4-122016	SM 4500-H+B	460624		
60234728004	BAA-3-122016	SM 4500-H+B	460624		
60234728001	BAA-6-121916	EPA 300.0	461703		
60234728001	BAA-6-121916	EPA 300.0	461949		
60234728002	BAA-2-122016	EPA 300.0	461703		
60234728002	BAA-2-122016	EPA 300.0	461949		
60234728003	BAA-4-122016	EPA 300.0	461703		
60234728003	BAA-4-122016	EPA 300.0	461949		
60234728004	BAA-3-122016	EPA 300.0	461703		
60234728004	BAA-3-122016	EPA 300.0	461949		



Sample Condition Upon Receipt



Client Name: Westar Energy	
Courier: FedEx □ UPS □ VIA Ø Clay □ PEX	□ ECI □ Pace □ Xroads □ Client □ Other □
Tracking #: Pace Shi	ipping Label Used? Yes □ No □
Custody Seal on Cooler/Box Present: Yes ✓ No □ Se	eals intact: Yes ☑ No □
Packing Material: Bubble Wrap ☐ Bubble Bags ☐ 05-0-3 CF-0.5	Foam None Other
Thermometer Used: 1-266 / T-239 Type of Ice:	Wet Blue None
Cooler Temperature (°C): As-read OB/O 4 Corr. Factor CF	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	PV 12/21/16
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):	Yes ØNo □N/A
Rush Turn Around Time requested:	Yes ØNo □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 □N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	lYes □No □M/A
Filtered volume received for dissolved tests?	lyes □No ØN/A
Sample labels match COC: Date / time / ID / analyses	Yes ONO ON/A
Samples contain multiple phases? Matrix: WT 🗆	Yes ØNo □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: N/A	
Load doctate strip turns dark: (resort only)	Yes □No
Potassium iodide test strip turns blue/purple? (Preserve)	lYes □No
Trip Blank present:	lYes □No □N/A
Headspace in VOA vials (>6mm):	Yes ONO DN/A
Samples from USDA Regulated Area: State:	Yes □No □N/A
Additional labels attached to 5035A / TX1005 vials in the field?	
Client Notification/ Resolution: Copy COC to Client	ent? Y / N Field Data Required? Y / N
Person Contacted: Date/Time:	·
Comments/ Resolution:	
Project Manager Review:	Date: 12/2/11/0



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 P		Inform	ation:					Secti Invoice	on C e Inform	nation:													Pag	ge:	1	of		
Company: WESTAR ENERGY	Report To:								Attenti	ion:	Jar	ed Mo	оптіѕ	on									-			-			
Address: 818 Kansas Ave	Сору То:	Jareo	d Mor	rison, He	eath Hor	nya			Comp	any Na	me:	WES	TAR	ENE	RGY				REG	ULA	TOR	Y AGE	NCY		Ţ,	lif-	TEE:	8-11-1	
Topeka, KS 66612		т	т						Addre	SS:		SEE :	SEC	TION	Α				P	NPD	ES	Г G	ROUN	ID W	ATER	Г	RINKING	WATER	
Email To: brandon.l.griffin@westarenergy.com	Purchase O	rder No	0.1						Pace C Refere										Г	UST		□ R	CRA			ГС	THER		
Phone: (785) 575-8135 Fax:	Project Nam	ne: ,	JEC	CCR Gro	undwate	er			Pace P Manag	roject	Hea	ather	Wils	on, 91	3-56	3-14	07		Site	e Loc	ation		VC		1//				
Requested Due Date/TAT: 7 DAY	Project Num	nber.	_							rofile #.	965	57, 1								ST	ATE:		KS		. [//				
		_									_					Re	eque	sted	Anal	ysis	Filter	ed (Y/	N)	V					
Section D Valid Matrix C	odes	Ę	6					П							N /A	П			П	T	П								
Required Client Information MATRIX DRINKING WATER	CODE DW	s to le	C=COMP)		COLL	ECTED		z		\vdash	Pre.	serva	tives	T	7	\vdash	\dashv	+	\vdash	+	+	+	+	-					
SAMPLE ID (A-Z, 0-9 /,-) WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR OTHER	WT WW P SL OL WP AR OT	DE (see valid codes to left)	(G=GRAB	COMPC STAR		COMPOS END/GR	SITE AB	TEMP AT COLLECTION	CONTAINERS	pa					s Test	Total Metals*	al Metals**	245.1 Lotal Mercury 300.0 Cl, Fl, SO4		So	28				Residual Chlorine (Y/N)	leor	3477	8	
Sample IDs MUST BE UNIQUE TISSUE	TS	MATRIX CODE	SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TE	# OF CONT	Unpreserved		HCI Na DE Na De Na De Na De Na De Na De Na De Na De Na De Na De Na De Na De Na De Na De Na De Ne De Na De Ne De Na De Ne De De Ne De De Ne De De De De De De De De De De De De De	Na ₂ S ₂ O ₃	Methanol	#Analysis	200.7 Tota	200.8 Total	300.0 Cl,	4500 H+B	2540C TDS	Radium 228			:			Project N		
1 BAA-6-121916		WT	6			121916	1703		4	1	3				릤										118	PULL	3P2N20	2801	
2 BAA-2-122016		WT	.6				0923		4	11	13				18	Ц				_			\perp	4	_	<u> </u>			62
3 BAA-4-122016			6			122016	1017		4	1	13							\perp		1				\perp		1		_	ws
4 BAA-3-122016	3	WT	6			122016	1322		4		3		+	H	1	Н	_	-	\vdash	-	-		\perp	\dashv	+	<u> </u>	4	-	wy
5							1112	_		\vdash		1	+	1		Н	4	-	Н	-		-	+	-	+				-
6								\vdash		\vdash	-	\vdash	+	H	3	Н	\dashv	+	\vdash	+	+	\vdash	-	+	+				\dashv
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11		H						+		+	+	\vdash	+	+	1	Н			H		+	\vdash	+	Ħ	+				
ADDITIONAL COMMENTS	J. N. B.	RELI	INOUI	SHED BY /	AFFILIAT	TON	DAT	E		FIME		-551	A	CCEPTI	D BY	/ AFF	ILIAT	ION		D/	TE	TI	ME	_		SAMPL	E CONDIT	ONS	
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	183	<u></u>	/ 3				12/20		-	15	-	. /.		/		m.	_	-			_	07		1-5	-1	4	~	V	-
**200,8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	1	1	1	// /	vest	CV .	MA	116		13		4	14			75	_		_	12/2	16	04	55	1.1		7	7	У	
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<u>д</u> Ф					SAMPL	ER NAME	AND SIGN	IATU	RE				Lu						ď,			le Hil		ပံ		5 5	ealed //N)	ntact	
Page 36 of 38						PRINT Nam		_		192	de	^	G	rif	Fr	1 5/	ATE S	igned	12	/2	0/1	16		Temp in °C		Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact	(Y/N)

Chain of Custody

WO#:30206488





Workorder: 60234728 Workorder Name: JEC CCR GROUNDWATER Owner Received Date: 12/21/2016 Results Requested By: 1/16/2017 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 Radium-226 & Total Sum Radium Phone (913)599-5665 Phone (724)850-5600 Preserved Containers HN03 Sample Collect Sample ID Date/Time Lab ID Item Type Matrix LAB USE ONLY PS X BAA-6-121916 12/19/2016 17:03 60234728001 Water 2 Χ BAA-2-122016 PS 2 Χ Χ 12/20/2016 09:23 60234728002 Water 3 PS BAA-4-122016 12/20/2016 10:17 60234728003 Water 2 Х Χ PS Χ Χ BAA-3-122016 12/20/2016 13:22 60234728004 2 Water 5 Comments **Transfers** Released By Date/Time Received By Date/Time Para ace 12/72 BOD 2 3 Cooler Temperature on Receipt MA Custody Seal Y or (N Received on Ice Y or N Samples Intact

^{***}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

30206488

Pace Analytical Client Name:		ac.	<u>e</u>	Project #
Courier: Fed Ex UPS USPS Courier: 7044 (657 950) Custody Seal on Cooler/Box Present: Custody	, <u>C</u> /es □ r	10	Seals	intact: yes no
	Type	of Icor	Wet	Blue None
Cooler Temperature Observed Temp	NA	٠C	Corre	ection Factor: NA °C Final Temp: NA °C
Temp should be above freezing to 6°C				Data and Initials of person examining
				contents:
Comments:	Yes	No	N/A	21-22-16
Chain of Custody Present:		,		1.
Chain of Custody Filled Out:				2.
Chain of Custody Relinquished:				3.
Sampler Name & Signature on COC:				4.
Sample Labels match COC:				<u>_</u> 5.
-Includes date/time/ID/Analysis Matrix:	(1)			
Samples Arrived within Hold Time:				6.
Short Hold Time Analysis (<72hr remaining)):			7.
Rush Turn Around Time Requested:				8.
Sufficient Volume:				9.
Correct Containers Used:				10.
-Pace Containers Used:				
	$\neg \uparrow \nearrow$			11.
Containers Intact:				12.
Filtered volume received for Dissolved tests All containers needing preservation have been checked			<u> </u>	13.
,				
All containers needing preservation are found to be i compliance with EPA recommendation.	"			
				Initial when completed Of preservation 12-22-16
exceptions: VOA, coliform, TOC, O&G, Phen	Olics			Lot # of added
				preservative
Headspace in VOA Vials (>6mm):		<u></u>		14.
Trip Blank Present:				15.
Trip Blank Custody Seals Present				
Rad Aqueous Samples Screened > 0.5 mre	m/hr	/		Initial when completed: Of Date: 17-77-16
Olivet Natification/ Passintian:				
Client Notification/ Resolution: Person Contacted:			Date	/Time:Contacted By:
Comments/ Resolution:				
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 1-5
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.: 60237753

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







CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

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.: 60237753

Lab ID	Sample ID	Matrix	Date Collected	Date Received	
60237753001	BAA-6-020817	Water	02/08/17 15:18	02/11/17 09:05	
60237753002	BAA-2-020917	Water	02/09/17 09:05	02/11/17 09:05	
60237753003	BAA-4-020917	Water	02/09/17 10:23	02/11/17 09:05	
60237753004	BAA-3-020917	Water	02/09/17 11:15	02/11/17 09:05	
60237753005	DUP-020917	Water	02/09/17 06:00	02/11/17 09:05	



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60237753001	BAA-6-020817	EPA 200.7	MDJ	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	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
0237753002	BAA-2-020917	EPA 200.7	NDJ	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	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
0237753003	BAA-4-020917	EPA 200.7	NDJ	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	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
0237753004	BAA-3-020917	EPA 200.7	NDJ	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	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
60237753005	DUP-020917	EPA 200.7	NDJ	7	PASI-K



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

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	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: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: March 08, 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: 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: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: March 08, 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.

Duplicate Sample:

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



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: March 08, 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.: 60237753

Method: EPA 903.1

Description:903.1 Radium 226Client:WESTAR ENERGYDate:March 08, 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.: 60237753

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:March 08, 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.: 60237753

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:March 08, 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.: 60237753

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: March 08, 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: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: March 08, 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.

BAA-2-020917 (Lab ID: 60237753002)
BAA-3-020917 (Lab ID: 60237753004)
BAA-4-020917 (Lab ID: 60237753003)
BAA-6-020817 (Lab ID: 60237753001)

• DUP-020917 (Lab ID: 60237753005)

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.: 60237753

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: March 08, 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.: 60237753

Date: 03/08/2017 03:13 PM

Sample: BAA-6-020817	Lab ID: 602	237753001	Collected: 02/08/1	7 15:18	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 Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.020	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:59	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:59	7440-41-7	
Boron, Total Recoverable	3.0	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:59	7440-42-8	
Calcium, Total Recoverable	506	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:59	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:59	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00			
ithium	0.074	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:59	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 14:12	7440-36-0	
Arsenic, Total Recoverable	0.0014	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:12	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 14:12	7440-43-9	
Cobalt, Total Recoverable	0.0011	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:12	7440-48-4	
Molybdenum, Total Recoverable	0.0047	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:12	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:12	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:12	7440-28-0	
45.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	02/23/17 14:30	02/24/17 13:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3110	mg/L	5.0	1		02/14/17 14:31		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		02/16/17 09:37		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	207	mg/L	20.0	20		02/15/17 18:11	16887-00-6	
Fluoride	0.62	mg/L	0.20	1		02/14/17 22:57	16984-48-8	
Sulfate	1710	mg/L	200	200		02/15/17 18:25	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 PM

Sample: BAA-2-020917	Lab ID: 602	237753002	Collected: 02/09/1	7 09:05	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	hod: EPA 200	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.049	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:01	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 13:01	7440-41-7	
Boron, Total Recoverable	0.92	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:01	7440-42-8	
Calcium, Total Recoverable	172	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:01	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:01	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:01	7439-92-1	
Lithium	0.021	mg/L	0.010	1	02/15/17 16:00	02/17/17 13:01	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:17	7440-36-0	
Arsenic, Total Recoverable	0.0045	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:17	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 14:17	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:17	7440-48-4	
Molybdenum, Total Recoverable	0.031	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:17	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:17	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:17	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 24	5.1 Preparation Met	hod: EF	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	02/23/17 14:30	02/24/17 13:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	0C					
Total Dissolved Solids	1170	mg/L	5.0	1		02/16/17 14:43		
1500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.5	Std. Units	0.10	1		02/16/17 09:42		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	103	mg/L	10.0	10		02/15/17 19:07	16887-00-6	
Fluoride	0.50	mg/L	0.20	1		02/14/17 23:11	16984-48-8	
Sulfate	570	mg/L	50.0	50		02/15/17 19:21	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 PM

Sample: BAA-4-020917	Lab ID: 602	237753003	Collected: 02/09/1	7 10:23	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 Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.030	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:08	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 13:08	7440-41-7	
Boron, Total Recoverable	0.84	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:08	7440-42-8	
Calcium, Total Recoverable	394	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:08	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:08	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:08	7439-92-1	
ithium	0.010	mg/L	0.010	1	02/15/17 16:00	02/17/17 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	02/15/17 16:00	02/22/17 14:21	7440-36-0	
Arsenic, Total Recoverable	0.0089	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:21	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 14:21	7440-43-9	
Cobalt, Total Recoverable	0.030	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:21	7440-48-4	
Molybdenum, Total Recoverable	0.12	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:21	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:21	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:21	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	02/23/17 14:30	02/24/17 13:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	4080	mg/L	5.0	1		02/16/17 14:44		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		02/16/17 09:43		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	171	mg/L	20.0	20		02/15/17 19:35	16887-00-6	
Fluoride	0.34	mg/L	0.20	1		02/14/17 23:54	16984-48-8	
Sulfate	2320	mg/L	200	200		02/15/17 19:49	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 PM

Sample: BAA-3-020917	Lab ID: 602	237753004	Collected: 02/09/1	7 11:15	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	0.011	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:10	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 13:10	7440-41-7	
Boron, Total Recoverable	2.1	mg/L	0.10	1		02/17/17 13:10		
Calcium, Total Recoverable	519	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:10	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:10	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		02/17/17 13:10		
_ithium	0.083	mg/L	0.010	1	02/15/17 16:00	02/17/17 13:10	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 14:25	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:25	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 14:25	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:25	7440-48-4	
Molybdenum, Total Recoverable	0.0015	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:25	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:25	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:25	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	02/23/17 14:30	02/24/17 13:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	C					
Total Dissolved Solids	3380	mg/L	5.0	1		02/16/17 14:45		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		02/16/17 09:45		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	156	mg/L	20.0	20		02/15/17 20:03	16887-00-6	
Fluoride	0.86	mg/L	0.20	1		02/15/17 00:09	16984-48-8	
Sulfate	2050	mg/L	200	200		02/15/17 20:17	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 PM

Sample: DUP-020917	Lab ID: 602	37753005	Collected: 02/09/1	7 06:00	Received: 02	2/11/17 09:05 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	0.048	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:13	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/17/17 13:13	7440-41-7	
Boron, Total Recoverable	1.1	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:13	7440-42-8	
Calcium, Total Recoverable	197	mg/L	0.10	1	02/15/17 16:00	02/17/17 13:13	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:13	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	02/15/17 16:00	02/17/17 13:13	7439-92-1	
Lithium	0.015	mg/L	0.010	1	02/15/17 16:00	02/17/17 13:13	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	02/15/17 16:00	02/22/17 14:30	7440-36-0	
Arsenic, Total Recoverable	0.0061	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:30	7440-38-2	
Cadmium, Total Recoverable	< 0.00050	mg/L	0.00050	1	02/15/17 16:00	02/22/17 14:30	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:30	7440-48-4	
Molybdenum, Total Recoverable	0.042	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:30	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:30	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	02/15/17 16:00	02/22/17 14:30	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	02/23/17 14:30	02/24/17 14:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC .					
Total Dissolved Solids	1300	mg/L	5.0	1		02/16/17 14:45		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.6	Std. Units	0.10	1		02/16/17 09:40		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	.0					
Chloride	125	mg/L	10.0	10		02/15/17 20:31	16887-00-6	
Fluoride	0.49	mg/L	0.20	1		02/15/17 00:23		
Sulfate	696	mg/L	50.0	50		02/15/17 20:44		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 PM

 QC Batch:
 466591
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1909505 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 02/24/17 13:35

LABORATORY CONTROL SAMPLE: 1909506

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: 1909507 1909508

MS MSD 60238043001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0051 70-130 5 20 Mercury mg/L .005 .005 0.0053 107 102

MATRIX SPIKE SAMPLE: 1909509 60237753001 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.00020 70-130 Mercury mg/L .005 0.0048 93

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.: 60237753

Date: 03/08/2017 03:13 PM

 QC Batch:
 465590
 Analysis Method:
 EPA 200.7

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

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1905571 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

Parameter	Units	Blank Result	Reporting 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	

LABORATORY CONTROL SAMPLE:	1905572					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% 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	97	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	0.96	96	85-115	
Lithium	mg/L	1	1.0	101	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 190557	73		1905574							
Parameter	6 Units	0237510001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.076	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	
Lithium	mg/L	0.024	1	1	0.98	0.97	95	95	70-130	1	20	

MATRIX SPIKE SAMPLE:	1905575						
		60237510002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.30		1.2	92	70-130	
Beryllium	mg/L	< 0.0010	1	0.93	93	70-130	
Boron	mg/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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 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	
Chromium	mg/L	<0.0050	10	0.91	91	70-130	
Lead	mg/L	<0.0050	1	0.88	88	70-130)
Lithium	mg/L	<0.010	1	0.97	96	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.: 60237753

Date: 03/08/2017 03:13 PM

 QC Batch:
 465593
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1905588 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

Parameter	Units	Blank Result	Reporting 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 CONTROL SAMPLE:	1905589					
Doromotor	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Parameter	Units	Conc.	Kesuit	% Rec	LIMIUS	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	

MS	% Rec	0	
% Rec	Limits	Qualifiers	
88	70-130		
110	0 70-130		
99	9 70-130		
94	70-130		
94	70-130		
91	70-130		
93	3 70-130		
	9	91 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.: 60237753

Date: 03/08/2017 03:13 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.: 60237753

QC Batch: 465477 Analysis Method: SM 2540C

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

Associated Lab Samples: 60237753001

METHOD BLANK: 1905096 Matrix: Water

Associated Lab Samples: 60237753001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 02/14/17 14:20

LABORATORY CONTROL SAMPLE: 1905097

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 982 98 80-120

SAMPLE DUPLICATE: 1905098

60237584001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 971 980 10 **Total Dissolved Solids** 1 mg/L

SAMPLE DUPLICATE: 1905099

Date: 03/08/2017 03:13 PM

Parameter Units 60237681002 Dup Max Result RPD Qualifiers
Total Dissolved Solids mg/L 1030 987 4 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.: 60237753

QC Batch: 465749 Analysis Method: SM 2540C

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

Associated Lab Samples: 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1906453 Matrix: Water Associated Lab Samples:

60237753002, 60237753003, 60237753004, 60237753005

Blank Reporting

Parameter Limit Analyzed Qualifiers Units Result

Total Dissolved Solids <5.0 5.0 02/16/17 14:39 mg/L

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 03:13 PM

60237753003 Dup Max RPD RPD Parameter Units Result Result Qualifiers 4080 **Total Dissolved Solids** mg/L 4040 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.: 60237753

 QC Batch:
 465627
 Analysis Method:
 SM 4500-H+B

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

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

SAMPLE DUPLICATE: 1905773

Date: 03/08/2017 03:13 PM

		60237753001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	C)	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.: 60237753

Date: 03/08/2017 03:13 PM

 QC Batch:
 465470
 Analysis Method:
 EPA 300.0

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

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1905076 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

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 MS 60237510002 Spike MS % Rec Parameter Units Result Conc. Result % Rec Limits Qualifiers 0.47 3.1 105 80-120 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.: 60237753

Chloride

Date: 03/08/2017 03:13 PM

Sulfate

 QC Batch:
 465543
 Analysis Method:
 EPA 300.0

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

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1905374 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

Blank Reporting Limit Qualifiers Parameter Units Result Analyzed <1.0 02/15/17 10:46 mg/L 1.0 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 99 90-110 mg/L Sulfate 5 5.0 100 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905377 1905376 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 15 Sulfate mg/L 165 100 100 260 263 96 99 80-120 15

MATRIX SPIKE SAMPLE: 1905378 MS MS 60237510003 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride 186 100 287 101 80-120 mg/L 122 223 80-120 Sulfate mg/L 100 102

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.: 60237753

Sample: BAA-6-020817 Lab ID: 60237753001 Collected: 02/08/17 15:18 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 1.07 ± 0.611 (0.561) Radium-226 pCi/L 03/06/17 12:31 13982-63-3 C:NA T:84% EPA 904.0 2.37 ± 0.657 (0.707) Radium-228 pCi/L 03/07/17 11:41 15262-20-1 C:92% T:72% Total Radium Total Radium 3.44 ± 1.27 (1.27) pCi/L 03/07/17 20:54 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

		53002 Collected: 02/09/17 09:05 Sample Type:	Received:	02/11/17 09:05	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.210 ± 0.455 (0.840) C:NA T:91%	pCi/L	03/06/17 12:45	13982-63-3	
Radium-228	EPA 904.0	0.735 ± 0.464 (0.862) C:64% T:81%	pCi/L	03/07/17 11:41	15262-20-1	
Total Radium	Total Radium Calculation	0.945 ± 0.919 (1.70)	pCi/L	03/07/17 20:54	1 7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Sample: BAA-4-020917 Lab ID: 60237753003 Collected: 02/09/17 10:23 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 $0.0743 \pm 0.437 \quad (0.893)$ Radium-226 pCi/L 03/06/17 12:45 13982-63-3 C:NA T:88% EPA 904.0 1.03 ± 0.459 (0.724) Radium-228 pCi/L 03/07/17 11:41 15262-20-1 C:64% T:86% Total Radium Total Radium 1.10 ± 0.896 (1.62) pCi/L 03/07/17 20:54 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Sample: BAA-3-020917 PWS:	•		Received:	02/11/17 09:05	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.278 ± 0.668 (1.21) C:NA T:91%	pCi/L	03/06/17 12:45	13982-63-3	
Radium-228	EPA 904.0	1.75 ± 0.703 (1.04) C:50% T:77%	pCi/L	03/07/17 11:41	15262-20-1	
Total Radium	Total Radium Calculation	2.03 ± 1.37 (2.25)	pCi/L	03/07/17 20:54	1 7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Sample: DUP-020917 PWS:	Lab ID: 602377 Site ID:	53005	Collected: 02/09/17 06:00 Sample Type:	Received:	02/11/17 09:05	Matrix: Water	
Parameters	Method	Ac	Act ± Unc (MDC) Carr Trac		Analyzed	CAS No.	Qual
Radium-226	EPA 903.1		± 0.521 (1.01) T:87%	pCi/L	03/06/17 12:45	13982-63-3	
Radium-228	EPA 904.0		± 0.565 (0.922) % T:81%	pCi/L	03/07/17 11:41	15262-20-1	
Total Radium	Total Radium Calculation	1.40 :	± 1.09 (1.93)	pCi/L	03/07/17 20:54	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

 QC Batch:
 250470
 Analysis Method:
 EPA 904.0

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

 Associated Lab Samples:
 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1232539 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

 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.: 60237753

QC Batch: 250469 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

METHOD BLANK: 1232538 Matrix: Water

Associated Lab Samples: 60237753001, 60237753002, 60237753003, 60237753004, 60237753005

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-226 0.000 ± 0.321 (0.654) C:NA T:91%pCi/L03/06/17 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.: 60237753

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 03:13 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.: 60237753

Date: 03/08/2017 03:13 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60237753001	BAA-6-020817	EPA 200.7	465590	EPA 200.7	465696
60237753002	BAA-2-020917	EPA 200.7	465590	EPA 200.7	465696
0237753003	BAA-4-020917	EPA 200.7	465590	EPA 200.7	465696
60237753004	BAA-3-020917	EPA 200.7	465590	EPA 200.7	465696
60237753005	DUP-020917	EPA 200.7	465590	EPA 200.7	465696
60237753001	BAA-6-020817	EPA 200.8	465593	EPA 200.8	465698
60237753002	BAA-2-020917	EPA 200.8	465593	EPA 200.8	465698
60237753003	BAA-4-020917	EPA 200.8	465593	EPA 200.8	465698
0237753004	BAA-3-020917	EPA 200.8	465593	EPA 200.8	465698
0237753005	DUP-020917	EPA 200.8	465593	EPA 200.8	465698
60237753001	BAA-6-020817	EPA 245.1	466591	EPA 245.1	466620
60237753002	BAA-2-020917	EPA 245.1	466591	EPA 245.1	466620
60237753003	BAA-4-020917	EPA 245.1	466591	EPA 245.1	466620
60237753004	BAA-3-020917	EPA 245.1	466591	EPA 245.1	466620
60237753005	DUP-020917	EPA 245.1	466591	EPA 245.1	466620
60237753001	BAA-6-020817	EPA 903.1	250469		
60237753002	BAA-2-020917	EPA 903.1	250469		
0237753003	BAA-4-020917	EPA 903.1	250469		
0237753004	BAA-3-020917	EPA 903.1	250469		
0237753005	DUP-020917	EPA 903.1	250469		
60237753001	BAA-6-020817	EPA 904.0	250470		
60237753002	BAA-2-020917	EPA 904.0	250470		
0237753003	BAA-4-020917	EPA 904.0	250470		
60237753004	BAA-3-020917	EPA 904.0	250470		
60237753005	DUP-020917	EPA 904.0	250470		
60237753001	BAA-6-020817	Total Radium Calculation	251399		
0237753002	BAA-2-020917	Total Radium Calculation	251399		
60237753003	BAA-4-020917	Total Radium Calculation	251399		
0237753004	BAA-3-020917	Total Radium Calculation	251399		
60237753005	DUP-020917	Total Radium Calculation	251399		
60237753001	BAA-6-020817	SM 2540C	465477		
60237753002	BAA-2-020917	SM 2540C	465749		
0237753003	BAA-4-020917	SM 2540C	465749		
0237753004	BAA-3-020917	SM 2540C	465749		
0237753005	DUP-020917	SM 2540C	465749		
60237753001	BAA-6-020817	SM 4500-H+B	465627		
60237753002	BAA-2-020917	SM 4500-H+B	465627		
60237753003	BAA-4-020917	SM 4500-H+B	465627		
0237753004	BAA-3-020917	SM 4500-H+B	465627		
60237753005	DUP-020917	SM 4500-H+B	465627		
60237753001	BAA-6-020817	EPA 300.0	465470		
60237753001	BAA-6-020817	EPA 300.0	465543		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60237753

Date: 03/08/2017 03:13 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60237753002	BAA-2-020917	EPA 300.0	465543		
60237753003	BAA-4-020917	EPA 300.0	465470		
60237753003	BAA-4-020917	EPA 300.0	465543		
60237753004	BAA-3-020917	EPA 300.0	465470		
60237753004	BAA-3-020917	EPA 300.0	465543		
60237753005	DUP-020917	EPA 300.0	465470		
60237753005	DUP-020917	EPA 300.0	465543		



Sample Condition Upon Receipt



Client Name: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\										
Courier: FedEx □ UPS □ VIA 🗗 Clay □ P	EX 🗆 E	CI 🗆	Pace □	Xroad	ds 🗆 C	Client □	Oth	er 🗆		
Tracking #: Pace	Shipping La	abel Use	d? Yes [□ No						
Custody Seal on Cooler/Box Present: Yes Ø No □	Seals intac	t: Yes 🎗	1 No □]						
Packing Material: Bubble Wrap □ Bubble Bags □	F	oam 🗆	Non	e K	Other	r 🗆				
Thermometer Used: (CF +1.5) CF +0.9 T-239 Type of I	Ice Wet E	Blue No	ne							
Cooler Temperature (°C): As-read // Corr. Factor	CF +1.5 CF +0.	9 Correc	ted 31					s of perso ents: ၂၉		13
Temperature should be above freezing to 6°C									-6117	
Chain of Custody present:	ØYes □No	□N/A	Extra	sample.	-> Dup.	-02 09	0 1	9/17 0	Le 0	(005
Chain of Custody relinquished:	∭Yes □No	□N/A				BPZU	GROW	BPZN		
Samples arrived within holding time:	Ø(Yes □No	□N/A					7577.			
Short Hold Time analyses (<72hr):	⊠Yes □No	□N/A	оH							
Rush Turn Around Time requested:	□Yes É No	□n/a	1							
Sufficient volume:	© Yes □No	□N/A								
Correct containers used:	ØiYes □No	□N/A								
Pace containers used:	I ÓYes □No	□N/A								
Containers intact:	t Yes □No	□n/a								
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No	IÓN/A								
Filtered volume received for dissolved tests?	□Yes □No	I N/A	2/							
Sample labels match COC: Date / time / ID / analyses	Mayes □No	□n/a								
Samples contain multiple phases? Matrix: 🌡 🏹	□Yes 🖺No	□N/A				Δ				
Containers requiring pH preservation in compliance?	Maryes □No	□n/a								- 1
(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	ØN/A								
Headspace in VOA vials (>6mm):	□Yes □No	Í⁄N/A								
Samples from USDA Regulated Area: State:	□Yes □No	ØN/A								
Additional labels attached to 5035A / TX1005 vials in the field?	□Yes □No	K (N/A				71				
Client Notification/ Resolution: Copy COC to C	Client? Y	/ N	Field	Data Req	juired?	Υ /	N			
Person Contacted: <u>Brandon Griffin</u> Date/Tir	me: <u>2/13</u>	/17								
Comments/ Resolution: DUP-020917 should be reported	on this pro	ect. HM	W 2/13/17	7						
Project Manager Review:		Date	e:							

By hwilson at 9:16 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,

ection	A Client Information:	Section E Required		t Infom	nation:						ion C e Infor	mation:													Page	:	1	of	1	
ompany	WESTAR ENERGY	Report To:	Brai	ndon	Griffin					Attent	tion:	Jar	ed Mo	orrisc	n					1				- 1						
ddress:	818 Kansas Ave	Copy To:	Jare	ed Mo	rrison, He	eath Hon	nya			Comp	any Na	me:	WES	TAR	ENE	RGY				RE	GUL	ATOR	Y AG	ENCY		3 1	To-			11.0
	Topeka, KS 66612		T							Addre	ess:		SEE :	SEC	TION	Α				F	NPI	DES	Г	GROUN	ND WA	TER [- D	RINKING	WATER	
mail To:	brandon.l.griffin@westarenergy.com	Purchase (Order 1	No.:						Pace (Refere											US	Г	Г	RCRA		Г	0	THER		- 1
none:	(785) 575-8135 Fax:	Project Na	me:	JEC	CCR Gro	oundwate	er		\neg		roject	He	ather	Wils	on, 91	3-56	3-14	07		Sit	te Lo	cation		140						
equest	ed Due Date/TAT: 7 DAY	Project Nu	mber:								Profile #	965	7, 1	Т				П			S	TATE:	-	KS	4					
			_			_			_				т				Re	eque	sted	Ana	lysis	Filter	red ((/N)	1//					
	Section D Valid Matrix (Required Client Information MATRIX DRINKING WATER	CODE	s to left)	C=COMP)		COLL	ECTED	- , ?	z			Pre	serva	tives		N/A					4									
	WATER WASTE WASTE WASTE WASTE WASTE WASTE PRODUCT SOIL/SOLID OIL SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE WATER WATER WATER WATER WATER WATER THER TISSUE	WT WW P SL OL WP AR OT TS	CODE (see valid codes to left)	TYPE (G=GRAB	COMPO		COMPC END/G	DSITE RAB	TEMP AT COLLECTION	CONTAINERS	erved			93	lol	ysis Test	Total Metals*	200.8 Total Metals**	lotal Mercury Cl, Fl, SO4	B.	TDS	1 226 1 228			Residual Chlorine (Y/N)	1		270	<i>C</i> 2	
ITEM #			MATRIX CODE	SAMPLE.	DATE	TIME	DATE	TIME	SAMPLE	# OF CC	Unpres	HNO ₃	HCI	Na ₂ S ₂ C	Methanol	↓ Analysis	200.7 T	200.8 7	245.1 lotal 1 300.0 Cl, Fl,	4500 H+B	2540C TDS	Radium 226 Radium 228			Residu		ace P	377 roject N	o./ Lab i	l.D.
1	BA4-6-020817		WI	G			2/8	1518		4	1	3														MPZU	12/8	IN B	15N20	001
2	BAA-2-020917		M	G			2/9	0905		4	L	3				l li										H				602
3	BAA-4-020917		M				2/9	102-3		4	1	3	_				Ш							\perp		1			1	OB.
4	BAA-3-020917		W	6		1	219	1115		4	l	3		-	4		Н	_	_		_	_	\sqcup	+	\vdash	1	,	-	1	ay
5			1				11	153			\Box	-		\vdash	4		Н	-	+	Ш	\dashv	+	H	+	\vdash	+		-		
6			1						\vdash		+	-	+	+	\vdash	- 18	Н	\dashv	+	\vdash	\dashv	-	H	-	\vdash	+-		+		
7								-	-		H	+	H	+	\vdash	-	Н	-	+	1	+	-	\vdash	-	\vdash	+	_	_		
8			-	+				1	\vdash		\vdash	+	+	-	H		Н		+	\vdash	\dashv	+	H	+	\vdash	_		_		_
9			+	-				-	H		+	+	+	+	\vdash	-	Н	-		\vdash	\dashv	+	Н	+	\vdash			_		
10			+	+							H		+	+	H	1	Н	-	+	\vdash	\vdash	+	Н		H					
11			+	+				-			+	+	-	+	H	1	H	+	+	Н	\vdash	+	Н	_	\vdash	1				
12	ADDITIONAL COMMENTS	1	REI	LINQUI	SHED BY /	AFFILIAT	ION	DAT	E		TIME			AC	CEPTE	D BY	/AFF	ILIAT	ION	Š	D	ATE		IME		s	AMPL	E CONDITI	ONS	
200.7 T	otal Metals: Ba, Be, B, Ca, Cr, Pb, Li	M	5	25		ester	/	2/10	מוע	12	00		/)/	1			1			1	1/12	00	05	2.1	1	/T	v	v	
*200.8	Total Metals: Co, As, Se, Mo, Cd, Sb, Tl				/ W·	,,,,,,	1		7.4	12			J			H					Cj	* /I.F	· ·	,,,,	7)1					
	Page																		-11							<u> </u>		p _B	**************************************	
	ge 41 of					SAMPL		AND SIGN me of SAM		_	(a)	der	7 6	a.	H.	7									Temp in °C	Received on	(4/4)	cooler (Y/N)	Samples Intact	(N)
	of 43						SIGNATU	RE of SAM	PLER:	13	2	2		7.6.			DA (N	ATE S	igned VYY):	02	10	/17	,		Terr	Rece	8	Custor	Ѕашр	_

Chain of Custody

WO#:30210711





Workorder: 60237753 Workorder Name: JEC CCR GROUNDWATER 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 Radium-226 & Total Sum Radium Phone (913)599-5665 Phone (724)850-5600 Preserved Containers HN03 Sample Collect Item Sample ID Date/Time Type Lab ID Matrix LAB USE ONLY BAA-6-020817 PS 2/8/2017 15:18 60237753001 2 $X \mid X$ Water 00 2 BAA-2-020917 PS 2 2/9/2017 09:05 60237753002 Water Х Χ 3 Χ BAA-4-020917 PS 2/9/2017 10:23 60237753003 2 Χ Water BAA-3-020917 PS 2/9/2017 11:15 60237753004 2 X Χ Water 5 PS DUP-020917 2/9/2017 06:00 60237753005 Water 2 X Χ Comments Transfers Released By Date/Time Received By Date/Time 2-14-17 2 Cooler Temperature on Receipt N/A °C Custody Seal (Y) or N 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

BUM

							Pin 46			
Face Analytical Client Name:	·	P	<u>uc</u>	e Ko	unsas	Project	# 30	21	07	1
Courier: Fed Ex UPS USPS	Client									
Tracking #: 7044 6654 5	275	00.11	11.0.0	141 141						
Custody Seal on Cooler/Box Present:	yes 🔲	no	Se	als intact:	yes [no				
Thermometer Used	Туре	of Ice	: W	/et Blue	None					
Cooler Temperature Observed Temp	NA	°C	Со	rrection Fa		°C Fina	al Temp:		° (C
Temp should be above freezing to 6°C	· · · · · · · ·	_								
						Date an	d Initials of nts: <u>RL</u> M	person e	xaminin - / 4 – / 7	1g 7
Comments:	Yes	No	N/	A						
Chain of Custody Present:		<u> </u>	_	1,						
Chain of Custody Filled Out:		1	-	2.						
Chain of Custody Relinquished:	_ /_	 	1	3.				,		
Sampler Name & Signature on COC:		/_		4.						
Sample Labels match COC:		ſ		5.						
-Includes date/time/ID Matrix:_	<u> </u>	JT_						- Control		
Samples Arrived within Hold Time:	_/			6,						
Short Hold Time Analysis (<72hr remaining):		/_		7.						
Rush Turn Around Time Requested:		/		8.						
Sufficient Volume:		/		9.						
Correct Containers Used:		-		10.						
-Pace Containers Used:										
Containers Intact:				11.						
Orthophosphate field filtered			1	12.						\neg
Organic Samples checked for dechlorination	ı:		//	13.	·					\neg
Filtered volume received for Dissolved tests				14.						
Il containers have been checked for preservation.				15.	Oi .					
Il containers needing preservation are found to be in ompliance with EPA recommendation.					PhL	2				
xceptions: VOA, coliform, TOC, O&G, Phenolic	••			Initial when	BLM	Date/time of				\Box
Acceptions. VOA, comorni, 100, Odd, Friendic	~			completed Lot # of adde	ed ed	preservation				\dashv
				preservative						_
eadspace in VOA Vials (>6mm):		<u> </u>	//	16.						_
rip Blank Present:			4	17.						
ip Blank Custody Seals Present				1 *** 1						
ad Aqueous Samples Screened > 0.5 mrem/h	r			Initial when completed:	BLM	Date: 2 -	-14-1	7		
lient Notification/ Resolution:		out the second s		and the second second		-	<u> </u>		4	
Person Contacted:		D	ate/T	ime:		Contact	ed By:			
Comments/ Resolution:										_
·										_
·										
							<u></u>			_
A check in this box indicates that add		r								

A check in this box indicates that additional information has been stored 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 1-6
April 2017 Sampling Event
Laboratory Analytical Report





May 03, 2017

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

RE: Project: JEC CCR Groundwater Pace Project No.: 60241710

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on April 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







CERTIFICATIONS

Project: JEC CCR Groundwater

Pace Project No.: 60241710

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
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.: 60241710

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60241710001	BAA-6-041017	Water	04/10/17 10:13	04/11/17 07:15
60241710002	BAA-4-041017	Water	04/10/17 11:30	04/11/17 07:15
60241710003	BAA-3-041017	Water	04/10/17 13:31	04/11/17 07:15
60241710004	BAA-2-041017	Water	04/10/17 14:47	04/11/17 07:15
60241710005	DUP-041017	Water	04/10/17 07:00	04/11/17 07:15



SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater

Pace Project No.: 60241710

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60241710001	BAA-6-041017	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241710002	BAA-4-041017	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241710003	BAA-3-041017	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241710004	BAA-2-041017	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241710005	DUP-041017	EPA 200.7	JGP	7	PASI-K



SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater

Pace Project No.: 60241710

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	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	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.: 60241710

Method: EPA 200.7

Description: 200.7 Metals, Total **Client:** WESTAR ENERGY **Date:** May 03, 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.: 60241710

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: May 03, 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.

Additional Comments:

Analyte Comments:

QC Batch: 473696

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BAA-4-041017 (Lab ID: 60241710002)
 - Selenium, Total Recoverable
 - Thallium, Total Recoverable



PROJECT NARRATIVE

Project: JEC CCR Groundwater

Pace Project No.: 60241710

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: May 03, 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.: 60241710

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** May 03, 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.: 60241710

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:May 03, 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.: 60241710

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:May 03, 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.: 60241710

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: May 03, 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.: 60241710

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: May 03, 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.

BAA-2-041017 (Lab ID: 60241710004)
BAA-3-041017 (Lab ID: 60241710003)
BAA-4-041017 (Lab ID: 60241710002)

• BAA-6-041017 (Lab ID: 60241710001)

• DUP-041017 (Lab ID: 60241710005)

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.: 60241710

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: May 03, 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: 472240

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60241579007

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

- MS (Lab ID: 1933694)
 - Sulfate

Additional Comments:

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



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

Sample: BAA-6-041017	Lab ID: 60	241710001	Collected: 04/10/1	7 10:13	Received: 04	//11/17 07:15 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	0.019	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:31	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:31	7440-41-7	
Boron, Total Recoverable	3.4	mg/L	0.10	1		04/24/17 14:31		
Calcium, Total Recoverable	551	mg/L	0.10	1		04/24/17 14:31		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:31	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:31		
_ithium	0.081	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:31	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	04/21/17 11:35	04/28/17 10:07	7440-36-0	
Arsenic, Total Recoverable	0.0014	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:07	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:07	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:07	7440-48-4	
Molybdenum, Total Recoverable	0.0044	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:07	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:07	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:07	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	04/13/17 08:30	04/13/17 11:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3430	mg/L	5.0	1		04/13/17 12:49		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	6.9	Std. Units	0.10	1		04/11/17 14:03		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	215	mg/L	20.0	20		04/11/17 19:49	16887-00-6	
Fluoride	0.72	mg/L	0.20	1		04/11/17 19:34	16984-48-8	
Sulfate	1860	mg/L	200	200		04/11/17 20:04	1/808-70-8	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

Sample: BAA-4-041017	Lab ID: 602	241710002	Collected: 04/10/1	7 11:30	Received: 04	//11/17 07:15 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	0.031	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:35	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:35	7440-41-7	
Boron, Total Recoverable	1.0	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:35	7440-42-8	
Calcium, Total Recoverable	374	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:35	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:35	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:35		
ithium	0.017	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:35	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	04/21/17 11:35	04/28/17 10:11	7440-36-0	
Arsenic, Total Recoverable	0.0094	mg/L	0.0020	2	04/21/17 11:35	05/02/17 11:53	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:11	7440-43-9	
Cobalt, Total Recoverable	0.021	mg/L	0.0020	2	04/21/17 11:35	05/02/17 11:53	7440-48-4	
Molybdenum, Total Recoverable	0.10	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:11	7439-98-7	
Selenium, Total Recoverable	<0.0020	mg/L	0.0020	2	04/21/17 11:35	05/03/17 14:48	7782-49-2	D3
Thallium, Total Recoverable	<0.0020	mg/L	0.0020	2	04/21/17 11:35	05/02/17 11:53	7440-28-0	D3
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	04/13/17 08:30	04/13/17 11:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	oC .					
Total Dissolved Solids	3520	mg/L	5.0	1		04/13/17 12:50)	
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.0	Std. Units	0.10	1		04/11/17 14:04		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	135	mg/L	20.0	20		04/11/17 21:03	16887-00-6	
Fluoride	0.45	mg/L	0.20	1		04/11/17 20:48	16984-48-8	
Sulfate	2020	mg/L	200	200		04/11/17 21:18	14808-79-8	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

Sample: BAA-3-041017	Lab ID: 60	241710003	Collected: 04/10/1	7 13:31	Received: 04	//11/17 07:15 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	0.0098	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:39	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:39	7440-41-7	
Boron, Total Recoverable	2.3	mg/L	0.10	1		04/24/17 14:39		
Calcium, Total Recoverable	539	mg/L	0.10	1		04/24/17 14:39		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:39		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:39		
Lithium	0.089	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:39	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	04/21/17 11:35	04/28/17 10:15	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:15	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:15	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:15	7440-48-4	
Molybdenum, Total Recoverable	0.0016	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:15	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		04/28/17 10:15		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:15	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	04/13/17 08:30	04/13/17 11:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3630	mg/L	5.0	1		04/13/17 12:51		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.0	Std. Units	0.10	1		04/11/17 14:06		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	157	mg/L	20.0	20		04/11/17 21:48	16887-00-6	
Fluoride	1.0	mg/L	0.20	1		04/11/17 21:33	16984-48-8	
Sulfate	2080	mg/L	200	200		04/11/17 22:03	14808-79-8	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

Sample: BAA-2-041017	Lab ID: 602	241710004	Collected: 04/10/1	7 14:47	Received: 04	I/11/17 07:15 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: EF	A 200.7			
Barium, Total Recoverable	0.043	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:42	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:42	7440-41-7	
Boron, Total Recoverable	0.90	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:42	7440-42-8	
Calcium, Total Recoverable	165	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:42	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:42	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:42	7439-92-1	
_ithium	0.023	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:42	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: EF	A 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:18	7440-36-0	
Arsenic, Total Recoverable	0.0027	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:18	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:18	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:18	7440-48-4	
Molybdenum, Total Recoverable	0.026	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:18	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:18	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:18	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EF	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/13/17 08:30	04/13/17 11:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	oc					
Total Dissolved Solids	1150	mg/L	5.0	1		04/13/17 12:51		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	D-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		04/11/17 14:09		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	95.3	mg/L	10.0	10		04/11/17 22:33	16887-00-6	
Fluoride	0.57	mg/L	0.20	1		04/11/17 22:18	16984-48-8	
Sulfate	536	mg/L	50.0	50		04/11/17 22:48	14808-79-8	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

Sample: DUP-041017	Lab ID: 602	241710005	Collected: 04/10/1	7 07:00	Received: 04	//11/17 07:15 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	0.018	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:46	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:46	7440-41-7	
Boron, Total Recoverable	3.0	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:46	7440-42-8	
Calcium, Total Recoverable	532	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:46	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:46	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1		04/24/17 14:46		
ithium	0.071	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:46	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	04/21/17 11:35	04/28/17 10:22	7440-36-0	
Arsenic, Total Recoverable	0.0012	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:22	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:22	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:22	7440-48-4	
Molybdenum, Total Recoverable	0.0042	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:22	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:22	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:22	7440-28-0	
45.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	04/13/17 08:30	04/13/17 11:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	3370	mg/L	5.0	1		04/13/17 12:52		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.0	Std. Units	0.10	1		04/11/17 14:02		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	208	mg/L	50.0	50		04/11/17 23:02	16887-00-6	
Fluoride	0.71	mg/L	0.20	1		04/11/17 23:47	16984-48-8	
Sulfate	1760	mg/L	200	200		04/12/17 18:43	14808-79-8	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

 QC Batch:
 472511
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1934867 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 04/13/17 11:20

LABORATORY CONTROL SAMPLE: 1934868

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: 1934869 1934870

MS MSD 60241856001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0046 70-130 20 Mercury mg/L <0.20 ug/L .005 .005 0.0046 92 91

MATRIX SPIKE SAMPLE: 1934871 60241857001 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers <0.20 ug/L 70-130 Mercury mg/L .005 0.0047 94

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.: 60241710

Date: 05/03/2017 04:27 PM

 QC Batch:
 473694
 Analysis Method:
 EPA 200.7

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

 Associated Lab Samples:
 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1939836 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

		Blank	Reporting		
Parameter	Units	Result	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	SPIKE 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.: 60241710

Date: 05/03/2017 04:27 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.: 60241710

Date: 05/03/2017 04:27 PM

 QC Batch:
 473696
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1939849 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

		Blank	Reporting		
Parameter	Units	Result	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					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.037	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	TE: 19398	52		1939853							
	•	0044000000	MS	MSD	140	MOD	140	MOD	0/ D			
Danamatan	_	0241636003	Spike	Spike	MS	MSD	MS % Dan	MSD	% Rec	DDD	Max	0
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	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.: 60241710

Date: 05/03/2017 04:27 PM

MATRIX SPIKE SAMPLE:	1939854						
Parameter	Units	60241636004 Result	Spike Conc.	MS Result	MS % Rec	% Rec 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.: 60241710

QC Batch: 472660 Analysis Method: SM 2540C

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

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1935328 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

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: 05/03/2017 04:27 PM

Parameter Units 60241741002 Dup 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.: 60241710

 QC Batch:
 472271
 Analysis Method:
 SM 4500-H+B

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

 Associated Lab Samples:
 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

SAMPLE DUPLICATE: 1933836

Date: 05/03/2017 04:27 PM

60241636001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.2 pH at 25 Degrees C 7.3 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.: 60241710

Date: 05/03/2017 04:27 PM

 QC Batch:
 472240
 Analysis Method:
 EPA 300.0

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

 Associated Lab Samples:
 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1933690 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

Blank Reporting Qualifiers Parameter Result Limit Units Analyzed Chloride mg/L <1.0 1.0 04/11/17 14:51 Fluoride mg/L < 0.20 0.20 04/11/17 14:51 Sulfate 04/11/17 14:51 mg/L <1.0 1.0

LABORATORY CONTROL SAMPLE: 1933691 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 5 4.8 96 90-110 Fluoride 2.5 2.5 100 90-110 mg/L Sulfate mg/L 5 5.0 100 90-110

MATRIX SPIKE SAMPLE:	1933694						
		60241579007	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	11.2	50	60.8	99	80-120	
Fluoride	mg/L	ND	25	27.1	109	80-120	
Sulfate	mg/L	110	50	172	125	80-120 N	<i>I</i> 11

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.: 60241710

Date: 05/03/2017 04:27 PM

QC Batch: 472372 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60241710005

METHOD BLANK: 1934230 Matrix: Water

Associated Lab Samples: 60241710005

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Sulfate mg/L <1.0 1.0 04/12/17 10:24

LABORATORY CONTROL SAMPLE: 1934231

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Sulfate mg/L 4.9 98 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1934232 1934233

MS MSD 60241714001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Sulfate 80-120 mg/L 25.2 10 10 35.4 35.5 103 103 0 15

MATRIX SPIKE SAMPLE: 1934234 MS MS 60241777001 Spike % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers Sulfate 114 165 104 80-120 mg/L 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.



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Sample: BAA-6-041017 PWS:	Lab ID: 602417 Site ID:	710001 Collected: 04/10/17 10: Sample Type:	13 Received:	04/11/17 07:15	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.439 ± 0.457 (0.680) C:NA T:95%	pCi/L	04/25/17 21:25	13982-63-3	
Radium-228	EPA 904.0	2.20 ± 0.619 (0.677) C:80% T:81%	pCi/L	04/29/17 13:26	5 15262-20-1	
Total Radium	Total Radium Calculation	2.64 ± 1.08 (1.36)	pCi/L	05/02/17 17:57	7 7440-14-4	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Sample: BAA-4-041017 PWS:	Lab ID: 6024171 Site ID:	0002 Collected: 04/10/17 11:30 Sample Type:	Received:	04/11/17 07:15	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.221 ± 0.337 (0.199) C:NA T:95%	pCi/L	04/25/17 21:2	5 13982-63-3	
Radium-228	EPA 904.0	1.11 ± 0.407 (0.574) C:84% T:85%	pCi/L	04/29/17 13:20	6 15262-20-1	
Total Radium	Total Radium Calculation	1.33 ± 0.744 (0.773)	pCi/L	05/02/17 17:5	7 7440-14-4	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Sample: BAA-3-041017 PWS:	Lab ID: 60241 Site ID:	710003 Collected: 04/10/17 13:3 Sample Type:	1 Received:	04/11/17 07:15	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.207 ± 0.316 (0.829) C:NA T:101%	pCi/L	04/25/17 21:49	13982-63-3	
Radium-228	EPA 904.0	2.13 ± 0.592 (0.623) C:83% T:80%	pCi/L	04/29/17 13:26	6 15262-20-1	
Total Radium	Total Radium Calculation	2.13 ± 0.908 (1.45)	pCi/L	05/02/17 17:57	7 7440-14-4	



Project: JEC CCR Groundwater

Pace Project No.: 60241710

Sample: BAA-2-041017 PWS:	Lab ID: 60241 Site ID:	710004 Collected: 04/10/17 14:47 Sample Type:	Received:	04/11/17 07:15	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.475 ± 0.583 (0.951) C:NA T:92%	pCi/L	04/25/17 21:42	13982-63-3	
Radium-228	EPA 904.0	1.37 ± 0.465 (0.632) C:79% T:89%	pCi/L	04/29/17 13:20	6 15262-20-1	
Total Radium	Total Radium Calculation	1.85 ± 1.05 (1.58)	pCi/L	05/02/17 17:5	7 7440-14-4	



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60241710

Sample: DUP-041017 PWS:	Lab ID: 602417 Site ID:	10005 Collected: 04/10/17 07:00 Sample Type:	Received:	04/11/17 07:15	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.443 ± 0.544 (0.888) C:NA T:92%	pCi/L	04/25/17 21:42	13982-63-3	
Radium-228	EPA 904.0	2.56 ± 0.689 (0.713) C:83% T:81%	pCi/L	04/29/17 13:59	15262-20-1	
Total Radium	Total Radium Calculation	3.00 ± 1.23 (1.60)	pCi/L	05/02/17 17:57	7 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60241710

 QC Batch:
 256398
 Analysis Method:
 EPA 904.0

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

 Associated Lab Samples:
 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1263033 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

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

 Radium-228
 0.171 ± 0.305 (0.666) C:86% T:87%
 pCi/L
 04/29/17 13:26

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.: 60241710

QC Batch: 255927 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

METHOD BLANK: 1260381 Matrix: Water

Associated Lab Samples: 60241710001, 60241710002, 60241710003, 60241710004, 60241710005

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

 Radium-226
 0.000 ± 0.380 (0.774) C:NA T:86%
 pCi/L
 04/25/17 21:08

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.: 60241710

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: 05/03/2017 04:27 PM

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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.

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.: 60241710

Date: 05/03/2017 04:27 PM

₋ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60241710001	BAA-6-041017	EPA 200.7	473694	EPA 200.7	473746
60241710002	BAA-4-041017	EPA 200.7	473694	EPA 200.7	473746
0241710003	BAA-3-041017	EPA 200.7	473694	EPA 200.7	473746
0241710004	BAA-2-041017	EPA 200.7	473694	EPA 200.7	473746
0241710005	DUP-041017	EPA 200.7	473694	EPA 200.7	473746
0241710001	BAA-6-041017	EPA 200.8	473696	EPA 200.8	473747
0241710002	BAA-4-041017	EPA 200.8	473696	EPA 200.8	473747
0241710003	BAA-3-041017	EPA 200.8	473696	EPA 200.8	473747
0241710004	BAA-2-041017	EPA 200.8	473696	EPA 200.8	473747
0241710005	DUP-041017	EPA 200.8	473696	EPA 200.8	473747
0241710001	BAA-6-041017	EPA 245.1	472511	EPA 245.1	472570
0241710002	BAA-4-041017	EPA 245.1	472511	EPA 245.1	472570
0241710003	BAA-3-041017	EPA 245.1	472511	EPA 245.1	472570
0241710004	BAA-2-041017	EPA 245.1	472511	EPA 245.1	472570
0241710004	DUP-041017	EPA 245.1	472511	EPA 245.1	472570
0241710001	BAA-6-041017	EPA 903.1	255927		
0241710002	BAA-4-041017	EPA 903.1	255927		
0241710002	BAA-3-041017	EPA 903.1	255927		
0241710003	BAA-3-041017 BAA-2-041017	EPA 903.1	255927		
0241710004	DUP-041017	EPA 903.1	255927		
0241710001	BAA-6-041017	EPA 904.0	256398		
0241710002	BAA-4-041017	EPA 904.0	256398		
0241710003	BAA-3-041017	EPA 904.0	256398		
0241710004	BAA-2-041017	EPA 904.0	256398		
0241710005	DUP-041017	EPA 904.0	256398		
0241710001	BAA-6-041017	Total Radium Calculation	257216		
0241710002	BAA-4-041017	Total Radium Calculation	257216		
0241710003	BAA-3-041017	Total Radium Calculation	257216		
0241710004	BAA-2-041017	Total Radium Calculation	257216		
0241710005	DUP-041017	Total Radium Calculation	257216		
0241710001	BAA-6-041017	SM 2540C	472660		
0241710002	BAA-4-041017	SM 2540C	472660		
0241710003	BAA-3-041017	SM 2540C	472660		
0241710004	BAA-2-041017	SM 2540C	472660		
0241710005	DUP-041017	SM 2540C	472660		
0241710001	BAA-6-041017	SM 4500-H+B	472271		
0241710002	BAA-4-041017	SM 4500-H+B	472271		
0241710003	BAA-3-041017	SM 4500-H+B	472271		
0241710004	BAA-2-041017	SM 4500-H+B	472271		
0241710005	DUP-041017	SM 4500-H+B	472271		
0241710001	BAA-6-041017	EPA 300.0	472240		
0241710002	BAA-4-041017	EPA 300.0	472240		
0241710002	BAA-3-041017	EPA 300.0	472240		
0241710003	BAA-3-041017 BAA-2-041017	EPA 300.0	472240		
			サノムムサリ		

REPORT OF LABORATORY ANALYSIS

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR Groundwater

Pace Project No.: 60241710

Date: 05/03/2017 04:27 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60241710005	DUP-041017	EPA 300.0	472372		



Sample Condition Upon Receipt



4 6 3(4)		
Courier: FedEx □ UPS □ VIA Clay □ PEX □ EC	I □ Pace □ Xroads □ Client □ Other □	
Tracking #: Pace Shipping Lat	pel Used? Yes □ No □	
Custody Seal on Cooler/Box Present: Yes ☑ No □ Seals intact	Yes ☑ No □	
	am □ None □ Other □	
Thermometer Used: 1/266 / T-239 Type of Ice: Wet Bl		
Cooler Temperature (°C): As-readCorr. Factor CF +1.5 CF +0.9	Corrected6 examining contents: 4/11/6	
Temperature should be above freezing to 6°C		
tody Seal on Cooler/Box Present: Yes		
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:	□N/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?	☑fN/A	
Sample labels match COC: Date / time / ID / analyses ☑Yes ☐No	□N/A	
Samples contain multiple phases? Matrix: W→ □Yes ☑No	□N/A	
,	□N/A	
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)		
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only) □Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)		
Trip Blank present: □Yes ☑No	□n/A	
Headspace in VOA vials (>6mm): □Yes □No	☑ N I/A	
Samples from USDA Regulated Area: State: □Yes □No	ØN/A	
Additional labels attached to 5035A / TX1005 vials in the field? ☐Yes ☐No	-TN/A	
Client Notification/ Resolution: Copy COC to Client? Y	/ N Field Data Required? Y / N	
Person Contacted: Date/Time:		
Per Temperature (*C): As-read		
<u></u>		
Project Manager Review:	Date: #III/7	



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 In	oformation:	Section B Required P		Inform	ation:						t ion C ce Infor	mation:													Pa	age:	1	of	_/	
Company: W	ESTAR ENERGY	Report To:								Atten	ition:	Jar	ed Mo	orriso	ก					1					_					
Address: 81	8 Kansas Ave	Сору То:	Jare	d Moi	rrison, He	eath Hor	nya			Comp	pany Na	ame:	WES	TAR	ENE	RGY		_		RE	GUL	ATO	RY A	GENC'	Υ	16	76			
To	ppeka, KS 66612									Addre	ess:		SEE :	SEC	TION.	A				F	NP	DES	Г	GROU	ND W	VATER	۲ ۲	DRINKI	NG W	ATER
mail To: bra	andon.l.griffin@westarenergy.com	Purchase C	rder N	lo_:						Pace (1_	US	Т	Г	RCRA			П	OTHER		
Phone: (785) 5	75-8135 Fax:	Project Nam	ne:	JEC	CCR Gro	oundwate	er				Project	He	ather	Wilso	on, 91	3-56	3-14	07		Si	te Lo	cation	T	Ħ		V	1111111	//////	/////	
Requested Due D	Date/TAT: 7 DAY	Project Nun	nber.							Manag Pace I	ger. Profile #	965	57, 1									TATE.		KS	3	_				
				T					Т			7		т			Re	eque	sted	Ana	lysis	Filte	red (Y/N)	E					
Section Required	D Valid Matrix C Client Information MATRIX	odes CODE	o left)	MP)		COLL	ECTED					Pre.	serva	tives		†N/A			-					5	П					
	DRINKING WATER WATER WASTE WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR	DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPO STAR	OSITE	COMPO END/GI	RAB	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved			Na ₂ S ₂ O ₃	Methanol Other	lysis Test	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury 300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226 Radium 228				Residual Chlorine (Y/N)	(go 2)			Lab I.D.
	14-6-041017		WT		DATE	TIVIE	4/10	1013	0,	4	+++	3	-1-	-	- 0	-	121	4	A LO	4	2	CE IE		\dashv	\vdash	_	(Brin)			
	244-4-AUINI7		WT				4/10			4	17	5		+		1		+	+	-	H	_	+		H	-	(GLIN)	100/	4	
2	BAA-4-041017 BAA-3-041017		UT				4/10	1331		4	+++	3	-		-		H	+	+	+	\vdash	+	+		+	+	_	+		202
3	BAA-2-041017		NT				4/10	1447		4	11	3		H	+	ı	H	+	+	+	\vdash	_	+	_	+	+	+	d		
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6											+	+	-	+		18		+	+			+		+	H	+	-			
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9											11	+		+		t			+			+	1-	-	Н		1			-
	1P-041017		WT	6			4/10	07CD		4	11	7		\Box			H						\Box		\forall	1	MADIAI	1.5 00	2N 5	Bezu /25
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	ADDITIONAL COMMENTS	1 3	RELI	NQUIS	HED BY /	AFFILIATI	ION	DAT	Ē	- 5	ПМЕ			ACC	CEPTE	D BY	/ AFFI	LLATI	ON		0	ATE	П	TIME			SAMP	LE CON	DITION	s
200.7 Total Meta	ls: Ba, Be, B, Ca, Cr, Pb, Li	MO	21	1	120	5/21		u /in	/17	17	60	1 -	V	=	_	_		70	Jes 1		и	11/17	10	15	1.1	6	V	٦		Ч
**200.8 Total Meta	als: Co, As, Se, Mo, Cd, Sb, Tl	1	1)) /-۱/		-1/10	/ 1/	• •		Ä	7	_		2		1	83,			1117	01	1)	1.			1		
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ge 40 of 42							PRINT Nam	ne of SAMF	LER:	B	(an	don	. (inc	F	h.	DA (M	TE SI	gned /YY):	04	/10	7/1	7	Serial A	Temp in °C		Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)

Chain of Custody



Wo	korde	r: 60241710	Workorder	Name: JEC CCF	R Groundwate	r			O	wne	er Re	celv	/ed	Date	: : 4	/11/2	2017	Re	sult	s Re	quest	ed By	: 5/3	/2017
Repo	ort To			Subcontrac	et To											Rec	ueste	d Ana	lysis					
Pace 9608 Lene	Loiret xa, KS	ical Kansas		1638 I Suites Green	Analytical Pittsb Roseytown Roa 2,3, & 4 sburg, PA 1560 (724)850-5600	d							adium-228	Total Radium			WC)# 	:3	02	15	86	4	
								rese	rved (Cont	tainers	5	Radiur	ım-226 &										
ltem	Sample	• ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HN03							Radium						***************************************			LAB U	SE ONLY
1	BAA-6-04	11017	PS	4/10/2017 10:13	60241710001	Water	2						Х	Х								\prod	00	1
2	BAA-4-04	11017	PS	4/10/2017 11:30	60241710002	Water	2						Х	Χ									00	2
3	BAA-3-04	11017	PS	4/10/2017 13:31	60241710003	Water	2						Х	Χ									00	3
4	BAA-2-04	11017	PS	4/10/2017 14:47	60241710004	Water	2						Х	Χ									00	,4
5	DUP-041	017	PS	4/10/2017 07:00	60241710005	Water	2						Х	Χ									00) S
Tran 1 2	sfers	Released By	o Luxe	Date/Time	Received B	-					Date/ 4/12			25					C	omme	nts			
	ler Ter	I nperature on F	Receipt M	→°C Cus	tody Seal Y	or N	***********		R	ece	ived	on	lce	Y	or ((آ)			Sa	ampl	es Int	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.

30215864

Sample Condition Upon Receipt Pittsburgh

Pace Analytical	Client Name:	-Po	Ce_	Ka	nsus Pr	roject #
Courier: Fed Ex	UPS	: [] (Comm	ercial	Pace Other	
Tracking #: (20)	r/Box Brocont: Dives		no	Seals	intact: Eves I r	10
	N I/Δ					
	urier: Fed Ex UPS USPS Client Commercial Pace Other cking #: 72 8 5 6 5 4 4 5 0 6 stody Seal on Cooler/Box Present: Yes no Seals intact: Yes no emmometer Used N/A Type of Ice: Wet Blue None oler Temperature Observed Temp N/A °C Correction Factor: N/A °C Final Temp: N/A °C op should be above freezing to 6°C Date and Initials of person examining contents: Content					
	• •	<u> </u>		Corre	Ction Factor. 1013	i mai romp. 100
remp should be above free.	zing to 6 C					Date and Initials of person examining
Comments:		Yes	No	N/A		contents: 4-11
	nt·				1.	
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					6	

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	e Requested:					
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					10.	
	ed:				44	
Containers Intact:				ار		
		 				
			<u> </u>			
Filtered volume received	for Dissolved tests	 	-			
			ļ	ļ <u>.</u>	15. PH < Z	
			1			
compliance with EPA recoil	illieridation.	L	.L	1	Initial when	
exceptions: VOA, colife	orm, TOC, O&G, Phenolics					preservation
	•				I .	
Headspace in VOA Vial	s (>6mm):				16.	
	<u> </u>				17.	
1 '	ls Present			/		
Rad Aqueous Samples	s Screened > 0.5 mrem/hr		/		Initial when KH completed:	Date: 4112117
						Contacted By:
	· ·			_ Date	ııme:	Contacted by.
Comments/ Resolution	n:					
					on has been stored in	erenorts
	s box indicates that add	itiona	u into	matic	JII IIAS DEEII SIOIEU III	oroporto.

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.: 60245290

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.: 60245290

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

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.: 60245290

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60245290001	BAA-6-052617	Water	05/26/17 07:27	05/27/17 08:50
60245290002	BAA-2-052617	Water	05/26/17 09:30	05/27/17 08:50
60245290003	BAA-4-052617	Water	05/26/17 10:54	05/27/17 08:50
60245290004	BAA-3-052617	Water	05/26/17 12:04	05/27/17 08:50
60245290005	DUP-052617	Water	05/26/17 06:00	05/27/17 08:50



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60245290001	BAA-6-052617	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
0245290002	BAA-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
0245290003	BAA-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
0245290004	BAA-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
60245290005	DUP-052617	EPA 200.7	TDS	7	PASI-K



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		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.: 60245290

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: June 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: 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.: 60245290

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: June 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.: 60245290

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: June 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.: 60245290

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** June 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.: 60245290

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: June 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.: 60245290

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:June 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.: 60245290

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: June 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.



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: June 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.

BAA-2-052617 (Lab ID: 60245290002)
 BAA-3-052617 (Lab ID: 60245290004)

BAA-4-052617 (Lab ID: 60245290003)
BAA-6-052617 (Lab ID: 60245290001)

• DUP-052617 (Lab ID: 60245290005)

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.: 60245290

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: June 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.

Additional Comments:

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



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

Sample: BAA-6-052617	Lab ID: 602	45290001	Collected: 05/26/1	7 07:27	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 Meth	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.018	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:00	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:00	7440-41-7	
Boron, Total Recoverable	2.8	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:00	7440-42-8	
Calcium, Total Recoverable	518	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:00	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:00	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:00	7439-92-1	
Lithium	0.059	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:00	7439-93-2	
200.8 MET ICPMS	Analytical Meth	nod: 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 18:23	7440-36-0	
Arsenic, Total Recoverable	0.0012	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:23	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:23	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:23	7440-48-4	
Molybdenum, Total Recoverable	0.0036	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:23	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:23	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:23	7440-28-0	
245.1 Mercury	Analytical Meth	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 11:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Meth	nod: SM 254	0C					
Total Dissolved Solids	3280	mg/L	5.0	1		05/31/17 09:38		
1500H+ pH, Electrometric	Analytical Meth	hod: SM 450	0-H+B					
oH at 25 Degrees C	6.9	Std. Units	0.10	1		06/02/17 13:34		H6
800.0 IC Anions 28 Days	Analytical Meth	nod: EPA 300	0.0					
Chloride	204	mg/L	20.0	20		05/31/17 16:42	16887-00-6	
Fluoride	0.76	mg/L	0.20	1		05/31/17 16:27		
Sulfate	1830	mg/L	200	200		05/31/17 16:56		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

Sample: BAA-2-052617	Lab ID: 602	245290002	Collected: 05/26/1	7 09:30	Received: 05	5/27/17 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	0.042	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:02	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:02	7440-41-7	
Boron, Total Recoverable	1.2	mg/L	0.10	1	06/01/17 09:44			
Calcium, Total Recoverable	195	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:02	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:02	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44			
ithium	0.012	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:02	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 18:29	7440-36-0	
Arsenic, Total Recoverable	0.0053	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:29	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:29	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:29	7440-48-4	
Molybdenum, Total Recoverable	0.047	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:29	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:29	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:29	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 11:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1380	mg/L	5.0	1		05/31/17 09:38		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	O-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		06/02/17 13:34		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	144	mg/L	10.0	10		05/31/17 18:11	16887-00-6	
Fluoride	0.49	mg/L	0.20	1		05/31/17 17:56	16984-48-8	
Sulfate	769	mg/L	50.0	50		05/31/17 17:11	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

Sample: BAA-4-052617	Lab ID: 602	245290003	Collected: 05/26/1	7 10:54	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 Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.027	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:05	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:05	7440-41-7	
Boron, Total Recoverable	1.0	mg/L	0.10	1		06/07/17 18:05		
Calcium, Total Recoverable	373	mg/L	0.10	1		06/07/17 18:05		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:05	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		06/07/17 18:05		
_ithium	<0.010	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:05	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	05/30/17 16:33	06/15/17 18:36	7440-36-0	
Arsenic, Total Recoverable	0.0073	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:36	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:36	7440-43-9	
Cobalt, Total Recoverable	0.017	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:36	7440-48-4	
Molybdenum, Total Recoverable	0.11	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:36	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:36	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:36	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	06/09/17 16:43	06/12/17 11:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC .					
Total Dissolved Solids	3740	mg/L	5.0	1		05/31/17 09:38		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		06/02/17 13:34		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	162	mg/L	20.0	20		05/31/17 18:41	16887-00-6	
Fluoride	0.32	mg/L	0.20	1		05/31/17 18:26	16984-48-8	
Sulfate	2330	mg/L	200	200		05/31/17 18:56	1/202-70-2	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

Sample: BAA-3-052617	Lab ID: 602	245290004	Collected: 05/26/1	7 12:04	Received: 05	/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: EF	PA 200.7			
Barium, Total Recoverable	0.0076	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:07	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:07	7440-41-7	
Boron, Total Recoverable	2.3	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:07	7440-42-8	
Calcium, Total Recoverable	522	mg/L	0.10	1	06/01/17 09:44	06/07/17 18:07	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:07	7440-47-3	
Lead, Total Recoverable	< 0.0050	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:07	7439-92-1	
Lithium	0.072	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:07	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:42	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:42	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:42	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:42	7440-48-4	
Molybdenum, Total Recoverable	0.0015	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:42	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:42	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:42	7440-28-0	
245.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EF	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	06/09/17 16:43	06/12/17 11:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC					
Total Dissolved Solids	3260	mg/L	5.0	1		05/31/17 09:39		
1500H+ pH, Electrometric	Analytical Met	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.2	Std. Units	0.10	1		06/02/17 13:34		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	155	mg/L	20.0	20		05/31/17 19:25	16887-00-6	
Fluoride	1.0	mg/L	0.20	1		05/31/17 19:11	16984-48-8	
Sulfate	2130	mg/L	200	200		05/31/17 19:40	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

Sample: DUP-052617	Lab ID: 602	245290005	Collected: 05/26/1	7 06:00	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 Me	thod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.041	mg/L	0.0050	1	06/01/17 09:44	06/07/17 18:10	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/01/17 09:44	06/07/17 18:10	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1		06/07/17 18:10		
Calcium, Total Recoverable	207	mg/L	0.10	1		06/07/17 18:10		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1		06/07/17 18:10		
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		06/07/17 18:10		
Lithium	<0.010	mg/L	0.010	1	06/01/17 09:44	06/07/17 18:10	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	05/30/17 16:33	06/15/17 18:49	7440-36-0	
Arsenic, Total Recoverable	0.0056	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:49	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:49	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:49	7440-48-4	
Molybdenum, Total Recoverable	0.050	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:49	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		06/15/17 18:49		
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:49	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	06/09/17 16:43	06/12/17 11:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1440	mg/L	5.0	1		05/31/17 09:39		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.5	Std. Units	0.10	1		06/02/17 13:34		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	144	mg/L	20.0	20		05/31/17 19:55	16887-00-6	
Fluoride	0.47	mg/L	0.20	1		05/31/17 20:55	16984-48-8	
Sulfate	776	mg/L	100	100		06/01/17 16:18	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

 QC Batch:
 479800
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1965095 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

Blank Reporting

 Parameter
 Units
 Result
 Limit
 Analyzed
 Qualifiers

 Mercury
 mg/L
 <0.00020</td>
 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

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

MATRIX SPIKE SAMPLE: 1965099

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.: 60245290

Date: 06/19/2017 04:22 PM

 QC Batch:
 479127
 Analysis Method:
 EPA 200.7

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

 Associated Lab Samples:
 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1962383 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

Parameter	Units	Blank Result	Reporting 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	

		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	NTE: 19623	85		1962386							
	0	0045400004	MS	MSD	MC	MCD	MC	MCD	0/ Das		N4	
Parameter	Units	0245129001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.072		1	1.0	1.0	95	95	70-130			
Beryllium	mg/L	<0.0010	1	1	0.96	0.97	96	97	70-130	_	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		1.0	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 N	1 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.: 60245290

Date: 06/19/2017 04:22 PM

MATRIX SPIKE SAMPLE:	1962387						
Dorometer	Lloito	60245129002	Spike	MS	MS % Rec	% Rec	Ouglifiers
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
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.: 60245290

Date: 06/19/2017 04:22 PM

 QC Batch:
 478816
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1961478 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

		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	

LABORATORY CONTROL SAMPLE:	1961479					
		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	SPIKE 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 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	Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.038	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.: 60245290

Date: 06/19/2017 04:22 PM

MATRIX SPIKE SAMPLE: Parameter	1961482						
	Units	60245129001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
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.: 60245290

QC Batch: 478945 Analysis Method: SM 2540C

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

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1961877 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

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 04:22 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.: 60245290

 QC Batch:
 479276
 Analysis Method:
 SM 4500-H+B

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

 Associated Lab Samples:
 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

SAMPLE DUPLICATE: 1962983

Date: 06/19/2017 04:22 PM

		60245416001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.0	C)	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.: 60245290

Date: 06/19/2017 04:22 PM

 QC Batch:
 478968
 Analysis Method:
 EPA 300.0

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

 Associated Lab Samples:
 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1961900 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

Parameter	Units	Blank Result	Reporting 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	ma/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPI	KE DUPLICA	ATE: 196190	02		1961903							
			MS	MSD								
	6	60245259005	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						
_		60245137009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% 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.

Max

RPD

Qual

RPD

Limits



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

QC Batch: 479186 QC Batch Method: EPA 300.0

Analysis Method: Analysis Description:

EPA 300.0 300.0 IC Anions

60245290005 Associated Lab Samples:

METHOD BLANK: 1962661

Matrix: Water

Associated Lab Samples:

Date: 06/19/2017 04:22 PM

Sulfate

60245290005

Blank Reporting

Parameter Units

Limit

Analyzed Qualifiers

Sulfate <1.0 1.0 06/01/17 09:12 mg/L

LABORATORY CONTROL SAMPLE: 1962662

> Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers mg/L 5.2 105 90-110

Result

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1962663

1962664

MS MSD 60245358001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec

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

Calculation

Pace Project No.: 60245290

Sample: BAA-6-052617 Lab ID: 60245290001 Collected: 05/26/17 07:27 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 $0.437 \pm 0.444 \quad (0.672)$ Radium-226 pCi/L 06/12/17 21:48 13982-63-3 C:NA T:93% EPA 904.0 2.68 ± 0.691 (0.624) 06/14/17 14:29 15262-20-1 Radium-228 pCi/L C:75% T:84% Total Radium Total Radium 3.12 ± 1.14 (1.30) pCi/L 06/15/17 12:46 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Sample: BAA-2-052617 PWS:	Lab ID: 6024529 Site ID:	0002 Collected: 05/26/17 09:30 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	0.806 ± 0.538 (0.668) C:NA T:93%	pCi/L	06/12/17 21:48	13982-63-3	
Radium-228	EPA 904.0	1.60 ± 0.512 (0.656) C:75% T:87%	pCi/L	06/14/17 14:29	15262-20-1	
Total Radium	Total Radium Calculation	2.41 ± 1.05 (1.32)	pCi/L	06/15/17 12:46	7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Sample: BAA-4-052617 PWS:	Lab ID: 6024529 0 Site ID:	O003 Collected: 05/26/17 10:54 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	0.410 ± 0.383 (0.544) C:NA T:93%	pCi/L	06/12/17 21:48	13982-63-3	
Radium-228	EPA 904.0	0.755 ± 0.437 (0.807) C:74% T:82%	pCi/L	06/14/17 14:30	15262-20-1	
Total Radium	Total Radium Calculation	1.17 ± 0.820 (1.35)	pCi/L	06/15/17 12:46	7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Sample: BAA-3-052617 Lab ID: 60245290004 Collected: 05/26/17 12:04 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 0.540 ± 0.340 (0.146) Radium-226 pCi/L 06/12/17 22:03 13982-63-3 C:NA T:103% EPA 904.0 1.06 ± 0.452 (0.744) Radium-228 pCi/L 06/14/17 14:30 15262-20-1 C:76% T:89% Total Radium Total Radium 1.60 ± 0.792 (0.890) pCi/L 06/15/17 12:46 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Sample: DUP-052617 Lab ID: 60245290005 Collected: 05/26/17 06:00 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 $0.729 \pm 0.439 \quad (0.180)$ Radium-226 pCi/L 06/12/17 22:03 13982-63-3 C:NA T:90% EPA 904.0 $0.494 \pm 0.376 \quad (0.740)$ Radium-228 pCi/L 06/14/17 14:30 15262-20-1 C:75% T:93% Total Radium Total Radium 1.22 ± 0.815 (0.920) pCi/L 06/15/17 12:46 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

QC Batch: 260596 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1283376 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

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

 Radium-226
 0.0588 ± 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.: 60245290

 QC Batch:
 260868
 Analysis Method:
 EPA 904.0

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

 Associated Lab Samples:
 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

METHOD BLANK: 1284605 Matrix: Water

Associated Lab Samples: 60245290001, 60245290002, 60245290003, 60245290004, 60245290005

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

 Radium-228
 0.409 ± 0.296 (0.562) C:78% T:83%
 pCi/L
 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.: 60245290

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 04:22 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.: 60245290

Date: 06/19/2017 04:22 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60245290001	BAA-6-052617	EPA 200.7	479127	EPA 200.7	479269
60245290002	BAA-2-052617	EPA 200.7	479127	EPA 200.7	479269
0245290003	BAA-4-052617	EPA 200.7	479127	EPA 200.7	479269
0245290004	BAA-3-052617	EPA 200.7	479127	EPA 200.7	479269
0245290005	DUP-052617	EPA 200.7	479127	EPA 200.7	479269
60245290001	BAA-6-052617	EPA 200.8	478816	EPA 200.8	478960
0245290002	BAA-2-052617	EPA 200.8	478816	EPA 200.8	478960
0245290003	BAA-4-052617	EPA 200.8	478816	EPA 200.8	478960
0245290004	BAA-3-052617	EPA 200.8	478816	EPA 200.8	478960
0245290005	DUP-052617	EPA 200.8	478816	EPA 200.8	478960
0245290001	BAA-6-052617	EPA 245.1	479800	EPA 245.1	480611
0245290002	BAA-2-052617	EPA 245.1	479800	EPA 245.1	480611
0245290003	BAA-4-052617	EPA 245.1	479800	EPA 245.1	480611
0245290004	BAA-3-052617	EPA 245.1	479800	EPA 245.1	480611
0245290005	DUP-052617	EPA 245.1	479800	EPA 245.1	480611
0245290001	BAA-6-052617	EPA 903.1	260596		
0245290002	BAA-2-052617	EPA 903.1	260596		
0245290003	BAA-4-052617	EPA 903.1	260596		
0245290004	BAA-3-052617	EPA 903.1	260596		
0245290005	DUP-052617	EPA 903.1	260596		
0245290001	BAA-6-052617	EPA 904.0	260868		
0245290002	BAA-2-052617	EPA 904.0	260868		
0245290003	BAA-4-052617	EPA 904.0	260868		
0245290004	BAA-3-052617	EPA 904.0	260868		
0245290005	DUP-052617	EPA 904.0	260868		
0245290001	BAA-6-052617	Total Radium Calculation	261901		
0245290002	BAA-2-052617	Total Radium Calculation	261901		
0245290003	BAA-4-052617	Total Radium Calculation	261901		
0245290004	BAA-3-052617	Total Radium Calculation	261901		
0245290005	DUP-052617	Total Radium Calculation	261901		
60245290001	BAA-6-052617	SM 2540C	478945		
0245290002	BAA-2-052617	SM 2540C	478945		
0245290003	BAA-4-052617	SM 2540C	478945		
0245290004	BAA-3-052617	SM 2540C	478945		
60245290005	DUP-052617	SM 2540C	478945		
0245290001	BAA-6-052617	SM 4500-H+B	479276		
0245290001	BAA-2-052617	SM 4500-H+B	479276		
0245290002	BAA-4-052617	SM 4500-H+B	479276		
0245290003	BAA-4-052617 BAA-3-052617	SM 4500-H+B	479276		
0245290004	DUP-052617	SM 4500-H+B	479276 479276		
0245290001	BAA-6-052617	EPA 300.0	478968		
0245290001 0245290002	BAA-0-052617 BAA-2-052617		478968		
		EPA 300.0			
0245290003 0245290004	BAA-4-052617	EPA 300.0	478968		
ハフタンノタいしじみ	BAA-3-052617	EPA 300.0	478968		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60245290

Date: 06/19/2017 04:22 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60245290005	DUP-052617	EPA 300.0	479186		,



Sample Condition Upon Receipt



Client Name: Nestw		
Courier: FedEx □ UPS □ VIA □ Clay □ F	PEX 🗆 ECI 🗆	Pace □ Xroads □ Client □ Other □
Tracking #: Pac	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 ☐ GF+2.9 CF+0.2	Foam 🗆	None Other 🗆
Thermometer Used: T-266 / (T-23) Type of	Ice: Wet Blue No	
Cooler Temperature (°C): As-readCorr. Factors	or CF +2.9 (F+0.) Correc	ted 3.2 Date and initials of person examining contents:
Temperature should be above freezing to 6°C		T
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	ЛИ
Rush Turn Around Time requested:	□Yes □No □N/A	/
Sufficient volume:	□Yes □No □N/A	28AA-2-057617 Sompes on CIC
Correct containers used:	Tes No N/A	Container label for sample
Pace containers used:	□Yes □No □N/A	Whetel @ 1204 Says DD is
Containers intact:	Yes ONO ON/A	BAA-3-0526A-
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☐N7A	
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: WT	□Yes □Mo □N/A	
Containers requiring pH preservation in compliance?	□Ves □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 □Mo □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 to	1	Field Data Required? Y / N
Person Contacted: Brandon Griffin Date/T	ime: <u>5/30/</u>	7
	ID should	be Used for the sample
	30/17	1 2 200 17 1/200 1/201
Per Brandon - Sample 1D Shoul	a be 13AT	1-3-052411 - ATTIW 5/30/11
Project Manager Review:	_ Dat	e: <u>5 30 11</u>



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

Section A Required Clien	nt Information:	Section B Required Pr	oject Infor	nation:				1		Inform									_						Pag	ge:	_1	of /	
company:	WESTAR ENERGY	Report To:	Brandon	Griffin				⊥	Attentio				огтіѕ																
ddress;	818 Kansas Ave	Copy To:	Jared Mo	orrison, He	eath Hor	nya		ľ	Compa	ıny Naı	ne:	WES	STAR	ENE	ERG	Υ				REG	UL	ATO	RY A	GENCY	1				
	Topeka, KS 66612							1	Addres	SS:		SEE	SEC	TION	ΙA					\	NPE)EŞ		GROUN	ND W	ATER	3 [DRINKING	WATER
mail To:	brandon.l.griffin@westarenergy.com	Purchase Or	rder No.;						Pace Qu Referen											Г	UST	•	П	RCRA			Г	OTHER	
Phone: (785	5) 575-8135 Fax:	Project Nam	e: JEC	CCR Gro	oundwate	ЭГ		7	Pace Pr Manage	roject	Hea	ather	Wils	on, 9	13-	563-	1407			Site	e Lo	ation	ī	140					
Requested Du	ue Date/TAT: 7 DAY	Project Num	ber.							rofile #:	965	7, 1							一		ST	ATE		KS_		- 10			
2000 M. A. S. L. S. C.	C 10 C 20 - 20 - 20 - 20 - 20 - 20 - 20					_		_	-		_		1			4	Req	uest	ted /	nal	ysis	Filte	red	(Y/N)	P	7111			
Santi	tion D Valid Matrix	Codes	2 0					П							1	N N	Т	T			T	Т	Т						
	uired Client Information MATRIX	CODE	codes to left)		COLL	ECTED		1	ļ		Pre	serva	atives	3	-	=	4	_	Н	_	4	+	+		1				
	DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR	WT WW P SL OL WP AR	E (see valid (G=GRAB	COMPC STAF		COMPO: END/GF		AT COLLECTION	INERS								Metals**	Mercury	, SO4			2 ~				Residual Chlorine (Y/N)	loss	1452	Įð
ITEM #	(A-Z, 0-9 / ,-) OTHER Sample IDs MUST BE UNIQUE TISSUE	OT TS	MATRIX CODE SAMPLE TYPE	DATE	TIME	DATE		SAMPLE TEMP	# OF CONTAINERS	Unpreserved	HNO ₃	HCI	Nach Na ₂ S ₂ O ₃	Methanol		lysis	200.7 Total Metals**	245.1 Total	[- -	4500 H+B	2540C TDS	Radium 228	T III			Residual Ch			o./ Lab I.D.
	AA-6-052617		WT G			5/26	0727		4	T	3														Ш		ROIN	SPZJ RPZ	io COI
2 B	IAA-2-052617		w 6			5/26	0930		4	1	3																		w
3 B	RAA-4-052617		WT 6			5/26	1054		4	1	3														Ц	\perp			as
	3AA-2-052617		w16			5/26	1204		4	1	3				\perp								1		Ш			<u> </u>	ay
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7																							\perp		Ц	4			
8															_								_	\perp		1			
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9 ==	ADDITIONAL COMMENTS		RELINQ	JISHED BY	/ AFFILIAT	пон	DATE		Т	IME	15			CCEP		BY /	AFFIL	OITA	N		D	ATE		TIME	_		SAMP	LE CONDIT	IONS
THE SECOND STREET	Metals: Ba, Be, B, Ca, Cr, Pb, Li	13	N	v	ies te	51	5/26/	17	17	45	5	K	end	M	_	/	~		5/r	11/2	2	0.9	70		3,	2	7	7	7
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40 of						100000 SA 102-10	ne of SAMPL			mo	len	6	n	Ff.	1		DAT	E Sig	ned			9 0:	_		Temp In °C	1 1	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
42						SIGNATUI	RE of SAMPL	ER:	1	4	凶	_					(MM	/DD/\	(Y):	25/	26	4	1			\perp	œ	30	တိ

Chain of Custody



TT-1775-220000000		rkorder l	Name:JEC CCI	R GROUNDW	/ATER		O,	wner R	Receiv	ed [Date:	5/27/201	7 Results l	Requested By	r: 6/21/2017
Repo	ort To	of Grand	Subcontra	ct To					100000000	and w	Singration		ted Analysis	roquested by	- 0/2 1/201/
Pace 9608 Lene	her Wilson Analytical Kansas Loiret Blvd. exa, KS 66219 ne 1(913)563-1407		1638 Suites Greer	Analytical Pittsk Roseytown Roa 3 2,3, & 4 Isburg, PA 156 9 (724)850-5600	nd 01			Containe			.226 & Total Radium	WO	#:302	20261	
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						РГЕ	servea	containe	ers		Radium-	3022			
ltem	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3		St			Rad	ALEXANDER AND ALEXANDER AND ALEXANDER AND ALEXANDER AND ALEXANDER AND ALEXANDER AND ALEXANDRA AND AL			LAB USE ONLY
1	BAA-6-052617	PS	5/26/2017 07:27	60245290001	Water	2				X	x				
2	BAA-2-052617	PS	5/26/2017 09:30	60245290002	Water	2			1	X	$\frac{x}{x}$			NAME OF THE PROPERTY OF THE PR	<u> </u>
3	BAA-4-052617	PS	5/26/2017 10:54	60245290003	Water	2				X	X			3000	<u> </u>
4	BAA-3-052617	PS	5/26/2017 12:04	60245290004	Water	2				$\frac{\lambda}{X}$	$\frac{x}{x}$				003 001
5	DUP-052617	PS	5/26/2017 06:00	60245290005	Water	2				X	$\frac{x}{x}$				<u> </u>
<u></u>													Com	ments	
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1 2	- My Sn / 1a	ع	5/30/17	1700 Kween	r Hiv			57/3	3/117	1945	5				
3	**************************************	***************************************			**************************************	***************									
	ler Temperature on Receip			stody Seal				eceive	******	*****		r Ø	Sam	ıples Intact	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

30220261

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Pace Analytical	Client Name:		Pa	Ù	Kansas	Project #
Courier: Fed Ex	ups Musps M cliv	ent 🗆	Comi	merci	al Pace Other	
Tracking #: 7285	6592 8386			110101		
Custody Seal on Cooler		. 🔲	no	Sea	ıls intact: 🖊 yes [no
Thermometer Used	MA	Туре	of Ice	: W	et Blue Mone	
Cooler Temperature	Observed Temp N	NA	° C	Cor	rection Factor: MQ-	°C Final Temp: NA °C
Temp should be above freezi	ng to 6°C		-			The state of the s
						Date and Initials of person examining contents: 44 5/3///7
Comments:		Yes	No	N//	\	
Chain of Custody Present:		/	ļ	—	1	
Chain of Custody Filled Ou	ut:	1/	<u> </u>	-	2,	
Chain of Custody Relinquis	shed:			<u> </u>	3.	
Sampler Name & Signature	e on COC;		/	_	4.	
Sample Labels match COO					_ 5.	
-Includes date/time/ID	Matrix: W	<u>}</u>	}	1		
Samples Arrived within Hol	ld Time:				6.	
Short Hold Time Analysis	(<72hr remaining):				7.	
Rush Turn Around Time I	Requested:		_		8,	
Sufficient Volume:					9.	
Correct Containers Used:					10.	
-Pace Containers Used:						
Containers Intact:				Sections II	<u></u>	
Orthophosphate field filtere	<u>d</u>			/	12.	
Organic Samples checke	ed for dechlorination:			/	13.	
Filtered volume received for		·		_	14.	
All containers have been check	(ed for preservation.	/			15. PH < 2	
All containers needing preserva					•	
compliance with EPA recommen	ndation.		ı	····	Initial when . 1/2 1	Date/time of
exceptions: VOA, coliform,	TOC, O&G, Phenolics				Initial when KH	preservation
					Lot # of added preservative	
Headspace in VOA Vials (>	6mm):				16.	
Trip Blank Present:					17.	***************************************
Trip Blank Custody Seals Pr	resent			/	· · · · · · · · · · · · · · · · · · ·	
Rad Aqueous Samples Sci	reened > 0.5 mrem/hr				initial when XH completed:	Date: 6/31/17
Client Notification/ Resolut	tion:	i	i			
)ate/T	ime:	Contacted By:
Comments/ Resolution:						
☐ A check in this box	indicates that additi	ional ir	nform	ation	has been stored 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 13, 2017

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

RE: Project: JEC CCR Groundwater

Pace Project No.: 60246928

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on June 20, 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,

Stanton M. 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

Project: JEC CCR Groundwater

Pace Project No.: 60246928

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.: 60246928

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60246928001	MW-FAA-6-061717	Water	06/17/17 10:30	06/20/17 15:25
60246928002	MW-BAA-7-061717	Water	06/17/17 14:00	06/20/17 15:25



SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater

Pace Project No.: 60246928

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60246928001	MW-FAA-6-061717	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	VAL	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
60246928002	MW-BAA-7-061717	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	VAL	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.: 60246928

Method: EPA 200.7

Description: 200.7 Metals, Total **Client:** WESTAR ENERGY **Date:** July 13, 2017

General Information:

2 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.: 60246928

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:

2 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.: 60246928

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:

2 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.: 60246928

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** July 13, 2017

General Information:

2 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.: 60246928

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:July 13, 2017

General Information:

2 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.: 60246928

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:July 13, 2017

General Information:

2 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.: 60246928

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY
Date: July 13, 2017

General Information:

2 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.: 60246928

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:

2 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.

MW-BAA-7-061717 (Lab ID: 60246928002)
 MW-FAA-6-061717 (Lab ID: 60246928001)

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.: 60246928

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:

2 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.: 60246928

Date: 07/13/2017 02:57 PM

Sample: MW-FAA-6-061717	Lab ID: 602	246928001	Collected: 06/17/1	7 10:30	Received: 06	5/20/17 15:25 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	0.065	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:05	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:05	7440-41-7	
Boron, Total Recoverable	2.2	mg/L	0.10	1	06/30/17 11:00			
Calcium, Total Recoverable	145	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:05	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:05	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	06/30/17 11:00			
ithium	<0.010	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:05	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	06/30/17 11:00	07/03/17 11:47	7440-36-0	
Arsenic, Total Recoverable	0.0049	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/30/17 11:00	07/03/17 11:47	7440-43-9	
Cobalt, Total Recoverable	0.0018	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7440-48-4	
Molybdenum, Total Recoverable	0.31	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	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	07/07/17 14:00	07/10/17 09:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	2020	mg/L	5.0	1		06/21/17 11:58		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		06/22/17 15:47	•	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	65.7	mg/L	10.0	10		06/22/17 16:24	16887-00-6	
- Fluoride	0.81	mg/L	0.20	1		06/21/17 22:21	16984-48-8	
Sulfate	1120	mg/L	100	100		06/21/17 22:51	14808-79-8	



ANALYTICAL RESULTS

Project: JEC CCR Groundwater

Pace Project No.: 60246928

Date: 07/13/2017 02:57 PM

Sample: MW-BAA-7-061717	Lab ID: 602	246928002	Collected: 06/17/1	7 14:00	Received: 06	6/20/17 15:25 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	0.051	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:08	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:08	7440-41-7	
Boron, Total Recoverable	0.79	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:08	7440-42-8	
Calcium, Total Recoverable	260	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:08	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:08	7440-47-3	
∟ead, Total Recoverable	<0.0050	mg/L	0.0050	1		07/10/17 18:08		
ithium	0.037	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:08	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	06/30/17 11:00	07/12/17 12:14	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/30/17 11:00	07/12/17 12:14	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7440-48-4	
Molybdenum, Total Recoverable	0.018	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	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	07/07/17 14:00	07/10/17 10:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1760	mg/L	5.0	1		06/21/17 11:58		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	O-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		06/22/17 15:49)	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	98.5	mg/L	10.0	10		06/22/17 16:39	16887-00-6	
Fluoride	0.64	mg/L	0.20	1		06/21/17 23:06	16984-48-8	
Sulfate	859	mg/L	100	100		06/21/17 23:20	14808-79-8	



Project: JEC CCR Groundwater

Pace Project No.: 60246928

MATRIX SPIKE SAMPLE:

Date: 07/13/2017 02:57 PM

QC Batch: 484318 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1983721 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 07/10/17 09:55

LABORATORY CONTROL SAMPLE: 1983722

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0051 102 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1983723 1983724

1983725

MS MSD 60246928001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0049 70-130 20 Mercury mg/L < 0.00020 .005 .005 0.0048 97 98

60247606001 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers ND 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.: 60246928

Date: 07/13/2017 02:57 PM

QC Batch: 483470 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1980483 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/10/17 18:03	
Beryllium	mg/L	< 0.0010	0.0010	07/10/17 18:03	
Boron	mg/L	<0.10	0.10	07/10/17 18:03	
Calcium	mg/L	<0.10	0.10	07/10/17 18:03	
Chromium	mg/L	< 0.0050	0.0050	07/10/17 18:03	
Lead	mg/L	< 0.0050	0.0050	07/10/17 18:03	
Lithium	mg/L	< 0.010	0.010	07/10/17 18:03	

LABORATORY CONTROL SAMPLE:	1980484					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		0.98	98	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.97	97	85-115	
Calcium	mg/L	10	10.5	105	85-115	
Chromium	mg/L	1	1.0	102	85-115	
Lead	mg/L	1	1.0	101	85-115	
Lithium	mg/L	1	0.96	96	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 19804	35		1980486							
Parameter	6 Units	0246928002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.051	1	1	1.0	1.0	100	99	70-130	0	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	0.99	100	99	70-130	1	20	
Boron	mg/L	0.79	1	1	1.8	1.8	101	102	70-130	0	20	
Calcium	mg/L	260	10	10	269	270	90	103	70-130	0	20	
Chromium	mg/L	< 0.0050	1	1	1.0	1.0	101	100	70-130	1	20	
Lead	mg/L	< 0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lithium	mg/L	0.037	1	1	1.1	1.1	103	103	70-130	0	20	

MATRIX SPIKE SAMPLE:	1980487						
		60247365006	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L	0.12	1	1.1	100	70-130	
Beryllium	mg/L	< 0.0010	1	0.98	98	70-130	
Boron	mg/L	2.0	1	3.0	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.: 60246928

Date: 07/13/2017 02:57 PM

MATRIX SPIKE SAMPLE:	1980487					_	
Parameter	Units	60247365006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	227	10	236	87	70-130	
Chromium	mg/L	< 0.0050	1	0.97	97	70-130	
Lead	mg/L	< 0.0050	1	0.89	88	70-130	
Lithium	mg/L	0.22	1	1.3	113	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.: 60246928

Date: 07/13/2017 02:57 PM

QC Batch: 483371 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1980101 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/03/17 11:39	
Arsenic	mg/L	< 0.0010	0.0010	07/03/17 11:39	
Cadmium	mg/L	< 0.00050	0.00050	07/03/17 11:39	
Cobalt	mg/L	< 0.0010	0.0010	07/03/17 11:39	
Molybdenum	mg/L	< 0.0010	0.0010	07/03/17 11:39	
Selenium	mg/L	< 0.0010	0.0010	07/03/17 11:39	
Thallium	mg/L	< 0.0010	0.0010	07/03/17 11:39	

LABORATORY CONTROL SAMPLE:	1980102					
5		Spike	LCS	LCS	% Rec	0 ""
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.039	97	85-115	
Cadmium	mg/L	.04	0.038	95	85-115	
Cobalt	mg/L	.04	0.039	99	85-115	
Molybdenum	mg/L	.04	0.040	99	85-115	
Selenium	mg/L	.04	0.037	93	85-115	
Thallium	mg/L	.04	0.036	89	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 198010	03		1980104							
Parameter	6 Units	0246928001 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	0.037	0.037	90	91	70-130	1	20	
Arsenic	mg/L	0.0049	.04	.04	0.040	0.040	88	88	70-130	0	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.031	0.031	78	78	70-130	0	20	
Cobalt	mg/L	0.0018	.04	.04	0.038	0.038	89	90	70-130	0	20	
Molybdenum	mg/L	0.31	.04	.04	0.36	0.36	116	105	70-130	1	20	
Selenium	mg/L	< 0.0010	.04	.04	0.034	0.033	83	81	70-130	3	20	
Thallium	mg/L	< 0.0010	.04	.04	0.033	0.033	82	82	70-130	0	20	

MATRIX SPIKE SAMPLE:	1980105						
		60247365005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0050	.04	0.037	91	70-130	
Arsenic	mg/L	< 0.0050	.04	0.037	86	70-130	
Cadmium	mg/L	< 0.0025	.04	0.032	79	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.: 60246928

Date: 07/13/2017 02:57 PM

MATRIX SPIKE SAMPLE:	1980105						
Parameter	Units	60247365005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
							Qualificis
Cobalt	mg/L	< 0.0050	.04	0.036	88	70-130	
Molybdenum	mg/L	0.0054	.04	0.046	101	70-130	
Selenium	mg/L	< 0.0050	.04	0.030	76	70-130	
Thallium	mg/L	< 0.0050	.04	0.033	80	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.: 60246928

QC Batch: 481991 Analysis Method: SM 2540C

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

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1974212 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 06/21/17 11:50

LABORATORY CONTROL SAMPLE: 1974213

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 964 96 80-120

SAMPLE DUPLICATE: 1974214

60246884001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 2070 0 10 **Total Dissolved Solids** 2060 mg/L

SAMPLE DUPLICATE: 1974215

Date: 07/13/2017 02:57 PM

60246832003 Dup Max RPD RPD Parameter Units Result Result Qualifiers 100 **Total Dissolved Solids** mg/L 98.5 2 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.: 60246928

QC Batch: 482225 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60246928001, 60246928002

SAMPLE DUPLICATE: 1975265

Date: 07/13/2017 02:57 PM

 Parameter
 Units
 60245949001 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 6.8
 7.1
 4
 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.: 60246928

QC Batch: 482018 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1974342 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

ParameterUnitsBlank ResultReporting LimitAnalyzedQualifiersFluoridemg/L<0.20</td>0.2006/21/17 08:21

Sulfate mg/L <1.0 1.0 06/21/17 08:21

LABORATORY CONTROL SAMPLE: 1974343

Spike LCS LCS % Rec Result Parameter Units Conc. % Rec Limits Qualifiers Fluoride mg/L 2.5 2.5 100 90-110 Sulfate mg/L 5 4.6 93 90-110

MATRIX SPIKE SAMPLE: 1974346

Date: 07/13/2017 02:57 PM

Parameter	Units	60246965001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	62.5	63.0	101	80-120	
Sulfate	mg/L	57.1	125	177	96	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.: 60246928

Date: 07/13/2017 02:57 PM

QC Batch: 482164 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1974902 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Chloride mg/L <1.0 1.0 06/22/17 08:34

LABORATORY CONTROL SAMPLE: 1974903

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 5.1 101 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1974904 1974905

MS MSD 60247044001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Chloride 2880 80-120 0 mg/L 1750 1000 1000 2880 112 113 15

MATRIX SPIKE SAMPLE: 1974906

MS 60246963002 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers Chloride 90.7 146 110 80-120 mg/L 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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60246928

Sample: MW-FAA-6-061717 PWS:	Lab ID: 6024692 Site ID:	8001 Collected: 06/17/17 10:30 Sample Type:	Received:	06/20/17 15:25	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.246 ± 0.772 (1.43) C:NA T:93%	pCi/L	06/30/17 10:16	13982-63-3	
Radium-228	EPA 904.0	0.401 ± 0.411 (0.840) C:79% T:81%	pCi/L	07/07/17 15:51	15262-20-1	
Total Radium	Total Radium Calculation	0.647 ± 1.18 (2.27)	pCi/L	07/13/17 11:40	7440-14-4	



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60246928

Sample: MW-BAA-7-061717 PWS:	Lab ID: 6024692 Site ID:	8002 Collected: 06/17/17 14:00 Sample Type:	Received:	06/20/17 15:25	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.301 ± 0.711 (1.32) C:NA T:84%	pCi/L	06/30/17 10:16	13982-63-3	
Radium-228	EPA 904.0	1.00 ± 0.518 (0.900) C:79% T:85%	pCi/L	07/07/17 15:51	15262-20-1	
Total Radium	Total Radium Calculation	1.30 ± 1.23 (2.22)	pCi/L	07/13/17 11:40	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60246928

QC Batch: 262895 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1294659 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

Parameter Act \pm Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.162 \pm 0.371 (0.598) C:NA T:92% pCi/L 06/30/17 10:16

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.: 60246928

QC Batch: 262906 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1294682 Matrix: Water

Associated Lab Samples: 60246928001, 60246928002

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

Radium-228 0.444 \pm 0.415 (0.840) C:79% T:86% pCi/L 07/07/17 15:51

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.: 60246928

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: 07/13/2017 02:57 PM

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.: 60246928

Date: 07/13/2017 02:57 PM

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
0246928001	MW-FAA-6-061717	EPA 200.7	483470	EPA 200.7	483561
0246928002	MW-BAA-7-061717	EPA 200.7	483470	EPA 200.7	483561
0246928001	MW-FAA-6-061717	EPA 200.8	483371	EPA 200.8	483560
0246928002	MW-BAA-7-061717	EPA 200.8	483371	EPA 200.8	483560
0246928001	MW-FAA-6-061717	EPA 245.1	484318	EPA 245.1	484436
0246928002	MW-BAA-7-061717	EPA 245.1	484318	EPA 245.1	484436
0246928001	MW-FAA-6-061717	EPA 903.1	262895		
0246928002	MW-BAA-7-061717	EPA 903.1	262895		
0246928001	MW-FAA-6-061717	EPA 904.0	262906		
0246928002	MW-BAA-7-061717	EPA 904.0	262906		
0246928001	MW-FAA-6-061717	Total Radium Calculation	264856		
0246928002	MW-BAA-7-061717	Total Radium Calculation	264856		
0246928001	MW-FAA-6-061717	SM 2540C	481991		
0246928002	MW-BAA-7-061717	SM 2540C	481991		
0246928001	MW-FAA-6-061717	SM 4500-H+B	482225		
0246928002	MW-BAA-7-061717	SM 4500-H+B	482225		
0246928001	MW-FAA-6-061717	EPA 300.0	482018		
0246928001	MW-FAA-6-061717	EPA 300.0	482164		
0246928002	MW-BAA-7-061717	EPA 300.0	482018		
0246928002	MW-BAA-7-061717	EPA 300.0	482164		



Sample Condition Upon Receipt



Client Name: Wester	
Courier: FedEx UPS VIA Clay PI	EX □ ECI □ Pace 🎢 Xroads □ Client □ Other □
Tracking #: Pace	Shipping Label Used? Yes □ No □
Custody Seal on Cooler/Box Present: Yes ₩ No □	Seals intact: Yes ☑ No □
Packing Material: Thermometer Used: Bubble Wrap Bubble Bags True CF +2.9 CF +0.2 T-266 / T-239 Type of I	Ice; Wet Blue None
	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	.N
Chain of Custody present:	ØYes □No □N/A
Chain of Custody relinquished:	Maryes □No □N/A
Samples arrived within holding time:	ÉYes □No □N/A
Short Hold Time analyses (<72hr):	BΣ¥es □No □N/A DH
Rush Turn Around Time requested:	□Yes 120No □N/A
Sufficient volume:	⊉ Yes □No □N/A
Correct containers used:	MYes □No □N/A
Pace containers used:	ØYes □No □N/A
Containers intact:	ÆYes □No □N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No IQON/A
Filtered volume received for dissolved tests?	□Yes □No 140n/A
Sample labels match COC: Date / time / ID / analyses	KDYes □No □N/A
Samples contain multiple phases? Matrix: \n\	□Yes MÁNO □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)	Total es □No □N/A
Cyanide water sample checks: Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No
Trip Blank present:	□Yes □No ANA
Headspace in VOA vials (>6mm):	□Yes □No KIN/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 to	Client? Y / N Field Data Required? Y / N
Person Contacted: Date/Tir Comments/ Resolution:	me:
Project Manager Review:	Date: 42117



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 E Required		ormation:						ction ace Ir	ı C nforma	ation:													Pag	je:	Ì	of	1	
Company	WESTAR ENERGY	Report To:	Brando	n Griffin					Atter	ntion:	1:	Jare	d Mor	rison																
Address	818 Kansas Ave	Сору То:	Jared N	Norrison, F	leath Hor	пуа			Com	ipany	y Nam	e: V	VEST	AR E	NEF	RGY				REC	ULA	TOR	Y AGE	NC'	Y		工克	7 5	4 -	
	Topeka, KS 66612								Addr	ress:		S	EE S	ECT	ON,	A				▼ NPDES ☐ GROUND WATER ☐ DRINKING WATER								ER		
Email To:	brandon.l.griffin@westarenergy.com	Purchase C	Order No.:							Quet											UST		r R	CRA				OTHER	_	
Phone:	(785) 575-8135 Fax:	Project Nar	ne: JE	C CCR G	roundwate	er			Pace	Proje		Heat	her V	Vilsor	ո, 91	3-56	3-140	7		Site	e Loca	ation				0	//////	///////	//////	///////
Requeste	ed Due Date/TAT: 7 DAY	Project Nur	nber:						Mana Pace		île #:	9657	, 1					_	-			ATE:		KS	3	. 10				
									-	_	-			_			Red	ques	sted	Anal	_		ed (Y/	N)	10					
	Section D Valid Matrix C Required Client Information MATRIX	CODE	les to left)		COLL	ECTED						Prese	rvatív	/es		N /A								ĺ						
	WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR	DW WT WW P SL CL WP AR	(See valid coc		POSITE	COMPC END/G	DSITE SRAB	AT COLLECTION	VERS							Test	Aetals*	Mercury	SO4						MALVA COLI	rine (Y/N)	60%	460	7 <i>2</i> &	,
ITEM #	(A-Z, 0-9 / ,-) OTHER Sample IDs MUST BE UNIQUE TISSUE	OT TS	MATRIX CODE SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	HOI	NaOH	Na ₂ S ₂ O ₃ Methanot	Other	#Analysis T	200.7 Total Metals*	245.1 Total IV	300.0 CI, FI,	4500 H+B	2540C TDS Radium 226	Radium 228				Residual Chlorine		Project		
1	MW-FAA-6-061717		WI G	617-17	1030	_			Ч	X		X			П	Ε.		T	T			X		П	П	Tí		3) BP 11		001
	MW-BAA-7-061717		WIG	11	1400				4	X	4	X				9 1						X				T	1	1		200
3																														7.5
4										\perp	Ц																			
5										_		1		_	Ш			_								\perp				
6				-						-	Ш	4	\sqcup	4	Н	Š.	_	_			_			Ш		\perp				
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	ADDITIONAL COMMENTS		RELINQU	IISHED BY	AFFILIATION	ON	DAT	E	1	TIME		8	311	ACCE	PTED	DY	AFFIL	IATIC	ON		DAT	E	TIM	Ē			SAMPI	E CONDIT	TONS	
*200 7 Tot	al Metals: Ba, Be, B, Ca, Cr, Pb, Li	VE	DOA	FORD	H+A		6-17-	17	15	20		n	A	1	1	/u	105	tai	/	6	/1.7	117	1520	5		T				
	ital Metals: Co, As, Se, Mo, Cd, Sb, Tl	119	2/		ester		6-19-		08			1	S	4	-/	1	ارد	leof o		_	1/2	7			23	7	V	V	У	
SEE L	ASELI ON CONTAINERS	1	1	/	-1			_		<u> </u>		4	1		V					7	1	1"	1)-		LW	$^{+}$	1		1	
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32 0						PRINT Narr		_	_	e	nd	16	F	70	d										Temp in °C		ived c	ly Sea er (Y/IA		§
of 36	ABELLON CONTAINERS					SIGNATUR	- Sayur										DATE (MM/	Sign	ned Y): 6	26/	17	11	7		Tem		Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)

Chain of Custody -

Pace Analytical www.pacelabs.com

Pac 960 Len	ather Wilson de Analytical Kansas 8 Loiret Blvd. exa, KS 66219 de 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road						litino a fait		900 milho	6 & Total Radlum	E TO CHICAGO COM COME COME
tem	Sample ID	Sample Type	Collect	Lab ID	Matrix	Pr 80NH	eserved	Соп	tainers		Radium-226	30222313
	MW-FAA-6-061717	PS	6/17/2017 10:30	60246928001	Water	2	11/	N.F	\vdash	+	, J	LAB USE ONL
	MW-BAA-7-061717	PS	6/17/2017 14:00	60246928002	Water	2	14))	_	
rans	sfers Released By Ray (Ball Man Ber Temperature on Receipt) ki ilin	Date/Time 2//2 /7t0 6-28-17	Received to	N N			الحال	Date/T	10		Comments

***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	eipt F	ittsb	ourgl	'n	30222311
Client Name:	QA	Œ.	-161	elau.	Project #
Courter: Fed Ex UPS USPS Clie Tracking #: 7340 1687 638	nt 🗆	Comm	nercial	Pace Other	
Custody Seal on Cooler/Box Present: yes		no	Seals	intact: ves	☐ no
			Wet	Blue (None	
,					°C Final Temp: °C
Temp should be above freezing to 6°C		•			p description of the second
Comments:	Yes	No	N/A		
Chain of Custody Present:	1			1.	
Chain of Custody Filled Out:	Ľ_			2.	44)(604)
Chain of Custody Relinquished:	/			3.	
Sampler Name & Signature on COC:		/		4.	
100000000000000000000000000000000000000	/			5,	
The second secon	NT				
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The state of the s		/		7.	2 2 2
		/		8.	
	_			9.	
1000 0000	Client Name: CACE - VANSAS Project # A A A A A A A A A				
		/			300
Courter: Set Ex Set UPS USPS Clear Commercial Pace Other Tracking st. TSU Cooker Set					
	-		3,2		AND RESTREET OF THE PROPERTY O
	-		SE SUES		
			-		
All containers have been checked for preservation.					
	\vdash		65	15.	
All containers needing preservation are found to be in compliance with EPA recommendation.				Initial when 74.1	Date/time of
exceptions: VOA, coliform, TOC, O&G, Phenolics				The state of the s	4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4
A A SOA HA A CONTRACTOR	1 1				
			/		
				17.	
	-				1 / / / / / / / /
		$\sqrt{}$		completed:	Date: OCCIT
Client Notification/ Resolution:					a a debut
· ·				lime:	Contacted By:
Comments/ Resolution:					
		-			
				10-	
A check in this box indicates that addi	tional	infor	natio	n has been stored	in ereports.
Note: Whenever there is a discrepancy affecting North Ca	rojina co	mplian	ce sam	ples, a copy of this form (will be sent to the North Carolina DEHNR
Certification Office ().e. nut of hold, incorrect preservative.	out of le	emp, ind	correct o	containers)	

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-4 15Dec2016)

Chain of Custody



	orkorder: 60246928 oort To	Workorder	Name:JEC CC		er		0	wnei	r Rece	ivec	Date	7/13/2017
Pac 960 Len	ather Wilson ce Analytical Kansas 8 Loiret Blvd. lexa, KS 66219 one 1(913)563-1407		Pace 1638 Suite Gree	Analytical Pittsk Roseytown Roa s 2,3, & 4 nsburg, PA 156 e (724)850-5600	ad		served			Radium-228	226 & Total Radium	Requested Analysis
ltem	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3	served	Conta	iners	2000 C	Radium-226	
l	MW-FAA-6-061717	PS	6/17/2017 10:30	60246928001	Water	2	-			1	1.1	LAB USE ONLY
	MW-BAA-7-061717	PS	6/17/2017 14:00	60246928002	Water	2				X	X	
					vva(C)	2				X	X	002
						(XXI) (Sec. Li11)	OMALICO SERVICACIO	USS COMMUNICATION				
ſran	sfers Released By		/ Date/Time	Received B	<u> </u>		ilissam distr	l-	ate/Tin			Comments
	Party	1/6/	21/12 1700	176	1	$\overline{}$					a	
2		/ /	1/1	164				47	217	70	1	
3					A .		·				_	
00	ler Temperature on Re	ceipt NA	°C Cus	tody Seal Y	or N		R	eceiv	/ed or	lce		or N Samples Intact Y or N
*In	order to maintain client	confidentiality			ac cito =		/ ·		, .		I	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.

િ ોગાં Condition Upon Rece	eipt F	ittsb	ourg	h	30222311	- i
Pace Client Name:	<u> </u>	Œ	-14	AUSAS	Project # 21	<u> 1. </u>
Courier: Fed Ex UPS USPS Clie Tracking #: 1340 1687 688	nt 🗆	Comn	nercial	Pace Other		
Custody Seal on Cooler/Box Present:		no	Seals	s intact:	no	
Thermometer Used NA	Туре	of Ice:	: We	t Blue None		
Cooler Temperature Observed Temp	- خاندین	°C	Corr	ection Factor:	°C Final Temp:	C
Temp should be above freezing to 6°C					Date and Initials of person examin	Ina I
				7	contents: 21- (0/22)(*	<u> </u>
Comments:	Yes	No	N/A		and the same of th	
Chain of Custody Present:	/		ļ	1.		-
Chain of Custody Filled Out:	<u> </u>		-	2.		
Chain of Custody Relinquished:				3.		
Sampler Name & Signature on COC:				4.		\dashv
Sample Labels match COC:				5,		
-Includes date/time/ID Matrix:	NI					
Samples Arrived within Hold Time:				6.		
Short Hold Time Analysis (<72hr remaining):				7.		
Rush Turn Around Time Requested:		/		8.		
Sufficient Volume:	<i></i>			9.		
Correct Containers Used:				10.		
-Pace Containers Used:		_/				
Containers Intact:				11.		
Orthophosphate field filtered				12		
Organic Samples checked for dechlorination:			/	13.		
Filtered volume received for Dissolved tests	-		/	14.		
All containers have been checked for preservation.				15.		Ì
All containers needing preservation are found to be in compliance with EPA recommendation.						
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed Lot # of added	Date/lime of preservation	
	· · · · · · · · · · · · · · · · · · ·			preservative		
Headspace in VOA Vials (>6mm):				16.		
Trip Blank Present:				17.		
Trip Blank Custody Seals Present			,	7		
Rad Aqueous Samples Screened > 0.5 mrem/hr				Initial when completed:	Date: (p(ZZ)(7-	
Client Notification/ Resolution:						
Person Contacted:			Date/	Time:	Contacted By:	
Comments/ Resolution:				, - MA		
A check in this box indicates that addi	tional	infor	natio	n has been stored it	n 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.



August 22, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

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.

Revised Report_rev.1 Per the client's request, the samples 60247863-003, -004, and -005 were re-evaluated down to the MDL.

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

Sincerely,

Diantos M. 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.: 60247863

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 #: 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.: 60247863

Lab ID	Sample ID	Matrix	Date Collected	Date Received	
60247863001	BAA-6-062917	Water	06/29/17 10:01	07/01/17 09:00	
60247863002	BAA-2-062917	Water	06/29/17 11:52	07/01/17 09:00	
60247863003	BAA-4-062917	Water	06/29/17 13:13	07/01/17 09:00	
60247863004	BAA-3-062917	Water	06/29/17 14:32	07/01/17 09:00	
60247863005	DUP-062917	Water	06/29/17 06:00	07/01/17 09:00	



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247863001	BAA-6-062917	EPA 200.7	SMW, 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
0247863002	BAA-2-062917	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
0247863003	BAA-4-062917	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP, 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
0247863004	BAA-3-062917	EPA 200.7	SMW, TDS	7	PASI-K
		EPA 200.8	JGP, 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
0247863005	DUP-062917	EPA 200.7	SMW, TDS	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.: 60247863

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP, 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 NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 22, 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 NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 22, 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.

Additional Comments:

Analyte Comments:

QC Batch: 484967

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BAA-3-062917 (Lab ID: 60247863004)
 - Thallium, Total Recoverable
- BAA-4-062917 (Lab ID: 60247863003)
 - Cadmium, Total Recoverable
 - Antimony, Total Recoverable
 - Thallium, Total Recoverable
- DUP-062917 (Lab ID: 60247863005)
 - Thallium, Total Recoverable



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Method:EPA 245.1Description:245.1 MercuryClient:WESTAR ENERGYDate:August 22, 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.: 60247863

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** August 22, 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.: 60247863

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 22, 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 NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:August 22, 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.: 60247863

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: August 22, 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.: 60247863

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 22, 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.

BAA-2-062917 (Lab ID: 60247863002)
BAA-3-062917 (Lab ID: 60247863004)

• BAA-4-062917 (Lab ID: 60247863003)

• BAA-6-062917 (Lab ID: 60247863001)

• DUP-062917 (Lab ID: 60247863005)

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.: 60247863

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 22, 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.: 60247863

Date: 08/22/2017 12:55 PM

Sample: BAA-6-062917	Lab ID: 602	247863001	Collected: 06/29/1	7 10:01	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 Met	hod: EPA 200	.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.019	mg/L	0.0050	1	07/12/17 16:35	07/16/17 16:46	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 16:46	7440-41-7	
Boron, Total Recoverable	2.6	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:09	7440-42-8	
Calcium, Total Recoverable	515	mg/L	0.10	1	07/12/17 16:35	07/16/17 16:46	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:09	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:09	7439-92-1	
Lithium	0.056	mg/L	0.010	1	07/12/17 16:35	07/16/17 16:46	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	07/12/17 16:35	07/16/17 15:22	7440-36-0	
Arsenic, Total Recoverable	0.0016	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:22	7440-38-2	
Cadmium, Total Recoverable	< 0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:22	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:22	7440-48-4	
Molybdenum, Total Recoverable	0.0031	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:22	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:22	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:22	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	07/17/17 16:19	07/19/17 10:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC .					
Total Dissolved Solids	3140	mg/L	5.0	1		07/06/17 10:54		
4500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
pH at 25 Degrees C	6.8	Std. Units	0.10	1		07/05/17 11:01		H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	.0					
Chloride	215	mg/L	20.0	20		07/23/17 19:28	16887-00-6	
Fluoride	0.35	mg/L	0.20	1		07/22/17 19:27		
Sulfate	1670	mg/L	200	200		07/23/17 19:44		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

Sample: BAA-2-062917	Lab ID: 602	247863002	Collected: 06/29/1	7 11:52	Received: 07	7/01/17 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	0.7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.040	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:13	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:13	7440-41-7	
Boron, Total Recoverable	0.99	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:13	7440-42-8	
Calcium, Total Recoverable	155	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:13	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:13	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:13	7439-92-1	
Lithium	0.021	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:13	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 15:26	7440-36-0	
Arsenic, Total Recoverable	0.0049	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:26	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:26	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:26	7440-48-4	
Molybdenum, Total Recoverable	0.030	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:26	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:26	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:26	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 10:32	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1180	mg/L	5.0	1		07/06/17 10:54		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	O-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		07/05/17 11:07		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	115	mg/L	10.0	10		07/23/17 19:59	16887-00-6	
Fluoride	0.44	mg/L	0.20	1		07/22/17 19:41	16984-48-8	
Sulfate	591	mg/L	50.0	50		07/23/17 20:15	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

Sample: BAA-4-062917	Lab ID: 602	247863003	Collected: 06/29/1	7 13:13	Received: 07	/01/17 09:00 N	Natrix: Water	
Parameters	Results	Units	PQL	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	0.028	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:17	7440-39-3	
Beryllium, Total Recoverable	0.0014	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:17	7440-41-7	
Boron, Total Recoverable	0.89	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:17	7440-42-8	
Calcium, Total Recoverable	350	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:17	7440-70-2	
Chromium, Total Recoverable	0.0015J	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:17	7440-47-3	
Lead, Total Recoverable	0.0026J	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:17	7439-92-1	
Lithium	0.013	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:17	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	<0.00013	mg/L	0.0050	5	07/12/17 16:35	07/21/17 12:10	7440-36-0	D3
Arsenic, Total Recoverable	0.0075	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:39	7440-38-2	
Cadmium, Total Recoverable	< 0.000089	mg/L	0.0025	5	07/12/17 16:35	07/21/17 12:10	7440-43-9	D3
Cobalt, Total Recoverable	0.023	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:39	7440-48-4	
Molybdenum, Total Recoverable	0.12	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:39	7439-98-7	
Selenium, Total Recoverable	0.00018J	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:39	7782-49-2	
hallium, Total Recoverable	<0.00018	mg/L	0.0050	5	07/12/17 16:35	07/21/17 12:10	7440-28-0	D3
45.1 Mercury	Analytical Met	hod: EPA 245	.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.000024	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	3530	mg/L	5.0	1		07/06/17 10:55		
1500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		07/05/17 11:17		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	.0					
Chloride	173	mg/L	20.0	20		07/23/17 20:31	16887-00-6	
Fluoride	0.34	mg/L	0.20	1		07/22/17 19:56	16984-48-8	
Sulfate	2200	mg/L	200	200		07/23/17 20:47	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

Sample: BAA-3-062917	Lab ID: 602	47863004	Collected: 06/29/1	7 14:32	Received: 07	//01/17 09:00 I	Matrix: Water	
Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qua
200.7 Metals, Total	Analytical Meth	hod: EPA 200).7 Preparation Met	hod: EP	A 200.7			
Barium, Total Recoverable	0.0074	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:28	7440-39-3	
Beryllium, Total Recoverable	0.0019	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:28	7440-41-7	
Boron, Total Recoverable	2.1	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:28	7440-42-8	
Calcium, Total Recoverable	454	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:28	7440-70-2	
Chromium, Total Recoverable	0.00087J	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:28	7440-47-3	
_ead, Total Recoverable	0.0034J	mg/L	0.0050	1	07/12/17 16:35	07/16/17 16:51	7439-92-1	
Lithium	0.087	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:28	7439-93-2	
200.8 MET ICPMS	Analytical Meth	hod: EPA 200	0.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	0.000062J	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:44	7440-36-0	
Arsenic, Total Recoverable	0.00070J	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:44	7440-38-2	
Cadmium, Total Recoverable	<0.000018	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:44	7440-43-9	
Cobalt, Total Recoverable	0.00016J	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:44	7440-48-4	
Molybdenum, Total Recoverable	0.0015	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:44	7439-98-7	
Selenium, Total Recoverable	<0.000086	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:44	7782-49-2	
hallium, Total Recoverable	<0.00018	mg/L	0.0050	5	07/12/17 16:35	07/21/17 12:18	7440-28-0	D3
245.1 Mercury	Analytical Meth	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.000024	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Meth	hod: SM 254	0C					
Total Dissolved Solids	3210	mg/L	5.0	1		07/06/17 10:56		
1500H+ pH, Electrometric	Analytical Meth	hod: SM 450	0-H+B					
oH at 25 Degrees C	7.1	Std. Units	0.10	1		07/05/17 12:01		H6
300.0 IC Anions 28 Days	Analytical Meth	hod: EPA 300	0.0					
Chloride	158	mg/L	20.0	20		07/23/17 21:03	16887-00-6	
Fluoride	0.86	mg/L	0.20	1		07/22/17 20:11	16984-48-8	
Sulfate	1940	mg/L	200	200		07/23/17 21:19	14808-79-8	



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

Sample: DUP-062917	Lab ID: 602	247863005	Collected: 06/29/1	7 06:00	Received: 07	7/01/17 09:00 I	Matrix: Water	
Parameters	Results	Units	PQL	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	0.018	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:32	7440-39-3	
Beryllium, Total Recoverable	0.0021	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:32	7440-41-7	
Boron, Total Recoverable	2.6	mg/L	0.10	1	07/12/17 16:35			
Calcium, Total Recoverable	484	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:32	7440-70-2	
Chromium, Total Recoverable	<0.00072	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:32	7440-47-3	
_ead, Total Recoverable	0.0040J	mg/L	0.0050	1	07/12/17 16:35	07/16/17 16:53	7439-92-1	
ithium	0.068	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:32	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: EP	A 200.8			
Antimony, Total Recoverable	0.00014J	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:48	7440-36-0	
Arsenic, Total Recoverable	0.0013	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:48	7440-38-2	
Cadmium, Total Recoverable	<0.000018	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:48	7440-43-9	
Cobalt, Total Recoverable	0.00072J	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:48	7440-48-4	
Molybdenum, Total Recoverable	0.0032	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:48	7439-98-7	
Selenium, Total Recoverable	<0.000086	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:48	7782-49-2	
Thallium, Total Recoverable	<0.00018	mg/L	0.0050	5	07/12/17 16:35	07/21/17 12:27	7440-28-0	D3
45.1 Mercury	Analytical Me	thod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.000024	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	oC .					
Total Dissolved Solids	2830	mg/L	5.0	1		07/06/17 11:05		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	6.8	Std. Units	0.10	1		07/05/17 10:58	i e	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	217	mg/L	20.0	20		07/23/17 22:07	16887-00-6	
luoride	0.35	mg/L	0.20	1		07/22/17 20:25	16984-48-8	
Sulfate	1500	mg/L	200	200		07/23/17 22:23	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

 QC Batch:
 485719
 Analysis Method:
 EPA 245.1

 QC Batch Method:
 EPA 245.1
 Analysis Description:
 245.1 Mercury

 Associated Lab Samples:
 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1989430 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

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

ParameterUnitsResultConc.Result% RecLimitsQualifiersMercurymg/L<0.000024</td>.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.: 60247863

Date: 08/22/2017 12:55 PM

 QC Batch:
 484970
 Analysis Method:
 EPA 200.7

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

 Associated Lab Samples:
 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1986115 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

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	ATE: 19861 ²	17		1986118							
Parameter	6 Units	0247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.29	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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

MATRIX SPIKE SAMPLE:	1986119						
Parameter	Units	60247926002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
	Onits				/0 IXEC		Qualifiers
Calcium	mg/L	289	10	302	129	70-130	
Chromium	mg/L	0.00085J	1	0.99	99	70-130	
Lead	mg/L	0.0028J	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.: 60247863

Date: 08/22/2017 12:55 PM

 QC Batch:
 484967
 Analysis Method:
 EPA 200.8

 QC Batch Method:
 EPA 200.8
 Analysis Description:
 200.8 MET

 Associated Lab Samples:
 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1986099 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

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	0.000077J	.04	0.036	90	70-130	
Arsenic	mg/L	0.00098J	.04	0.038	93	70-130	
Cadmium	mg/L	<0.000018	.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.



QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

MATRIX SPIKE SAMPLE:	1986103						
Parameter	Units	60247926001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
- Farameter	Office	Resuit	COIIC.	Result	76 KeC	LIIIIIIS	Qualifiers
Cobalt	mg/L	0.00052J	.04	0.034	83	70-130	
Molybdenum	mg/L	0.011	.04	0.049	96	70-130	
Selenium	mg/L	<0.000086	.04	0.035	88	70-130	
Thallium	mg/L	0.000057J	.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.: 60247863

QC Batch: 484031 Analysis Method: SM 2540C

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

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1982762 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

Blank Reporting

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 07/06/17 10:49

LABORATORY CONTROL SAMPLE: 1982763

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 963 96 80-120

SAMPLE DUPLICATE: 1982764

60247863001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 3140 2 10 H1 **Total Dissolved Solids** 3070 mg/L

SAMPLE DUPLICATE: 1982765

Date: 08/22/2017 12:55 PM

60247918001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 520 **Total Dissolved Solids** mg/L 530 2 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.: 60247863

QC Batch: 483928 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863005

SAMPLE DUPLICATE: 1982407

Date: 08/22/2017 12:55 PM

60247547002 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.8 pH at 25 Degrees C 7.8 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.: 60247863

QC Batch: 483969 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60247863004

SAMPLE DUPLICATE: 1982512

Date: 08/22/2017 12:55 PM

 Parameter
 Units
 60247835001 Result
 Dup Result
 Max RPD
 Max 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.: 60247863

Date: 08/22/2017 12:55 PM

 QC Batch:
 486562
 Analysis Method:
 EPA 300.0

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

 Associated Lab Samples:
 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1992836 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

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.: 60247863

Chloride

Date: 08/22/2017 12:55 PM

Sulfate

 QC Batch:
 486575
 Analysis Method:
 EPA 300.0

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

 Associated Lab Samples:
 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1993281 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

Blank Reporting Parameter Result Limit Qualifiers Units 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 mg/L Sulfate 5 5.0 100 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1993283 1993284 MSD MS 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	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	 mg/L	35.6	25	61.0	102	80-120	
Sulfate	mg/L	247	100	360	114	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.: 60247863

Sample: BAA-6-062917 Lab ID: 60247863001 Collected: 06/29/17 10:01 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 1.14 ± 0.637 (0.660) Radium-226 pCi/L 07/17/17 12:04 13982-63-3 C:NA T:82% 2.50 ± 0.767 (1.01) EPA 904.0 Radium-228 pCi/L 07/19/17 11:38 15262-20-1 C:74% T:69% Total Radium Total Radium $3.64 \pm 1.40 \quad (1.67)$ pCi/L 07/20/17 16:51 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Sample: BAA-2-062917 PWS:	Lab ID: 6024786 Site ID:	3002 Collected: 06/29/17 11:52 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	1.35 ± 0.700 (0.829) C:NA T:96%	pCi/L	07/17/17 12:04	13982-63-3	
Radium-228	EPA 904.0	0.992 ± 0.481 (0.837) C:74% T:79%	pCi/L	07/19/17 11:38	15262-20-1	
Total Radium	Total Radium Calculation	2.34 ± 1.18 (1.67)	pCi/L	07/20/17 16:51	7440-14-4	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Sample: BAA-4-062917 Lab ID: 60247863003 Collected: 06/29/17 13:13 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 $0.305 \pm 0.361 \quad (0.567)$ Radium-226 pCi/L 07/17/17 12:04 13982-63-3 C:NA T:91% EPA 904.0 0.701 ± 0.492 (0.941) 07/19/17 19:18 15262-20-1 Radium-228 pCi/L C:77% T:84% Total Radium Total Radium 1.01 ± 0.853 (1.51) pCi/L 07/20/17 16:51 7440-14-4 Calculation



Project: JEC CCR GROUNDWATER

Calculation

Pace Project No.: 60247863

Sample: BAA-3-062917 Lab ID: 60247863004 Collected: 06/29/17 14:32 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 1.05 ± 0.592 (0.663) Radium-226 pCi/L 07/17/17 12:04 13982-63-3 C:NA T:89% 1.02 ± 0.572 (1.02) EPA 904.0 Radium-228 pCi/L 07/19/17 19:18 15262-20-1 C:80% T:72% Total Radium Total Radium 2.07 ± 1.16 (1.68) pCi/L 07/20/17 16:51 7440-14-4



Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Sample: DUP-062917 PWS:	Lab ID: 6024786 Site ID:	3005 Collected: 06/29/17 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	0.518 ± 0.405 (0.476) C:NA T:90%	pCi/L	07/17/17 12:22	13982-63-3	
Radium-228	EPA 904.0	2.16 ± 0.704 (0.878) C:79% T:73%	pCi/L	07/19/17 18:38	3 15262-20-1	
Total Radium	Total Radium Calculation	2.68 ± 1.11 (1.35)	pCi/L	07/20/17 16:51	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

QC Batch: 264358 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226 Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1301994 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

 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.: 60247863

 QC Batch:
 264520
 Analysis Method:
 EPA 904.0

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

 Associated Lab Samples:
 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

METHOD BLANK: 1302880 Matrix: Water

Associated Lab Samples: 60247863001, 60247863002, 60247863003, 60247863004, 60247863005

 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

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.: 60247863

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: 08/22/2017 12:55 PM

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.	

- D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- H1 Analysis conducted outside the EPA method holding time.
- 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.
- 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.: 60247863

Date: 08/22/2017 12:55 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247863001	BAA-6-062917	EPA 200.7	484970	EPA 200.7	485208
60247863002	BAA-2-062917	EPA 200.7	484970	EPA 200.7	485208
60247863003	BAA-4-062917	EPA 200.7	484970	EPA 200.7	485208
60247863004	BAA-3-062917	EPA 200.7	484970	EPA 200.7	485208
0247863005	DUP-062917	EPA 200.7	484970	EPA 200.7	485208
60247863001	BAA-6-062917	EPA 200.8	484967	EPA 200.8	485209
0247863002	BAA-2-062917	EPA 200.8	484967	EPA 200.8	485209
0247863003	BAA-4-062917	EPA 200.8	484967	EPA 200.8	485209
0247863004	BAA-3-062917	EPA 200.8	484967	EPA 200.8	485209
60247863005	DUP-062917	EPA 200.8	484967	EPA 200.8	485209
0247863001	BAA-6-062917	EPA 245.1	485719	EPA 245.1	485787
0247863002	BAA-2-062917	EPA 245.1	485719	EPA 245.1	485787
60247863003	BAA-4-062917	EPA 245.1	485719	EPA 245.1	485787
60247863004	BAA-3-062917	EPA 245.1	485719	EPA 245.1	485787
60247863005	DUP-062917	EPA 245.1	485719	EPA 245.1	485787
0247863001	BAA-6-062917	EPA 903.1	264358		
0247863002	BAA-2-062917	EPA 903.1	264358		
0247863003	BAA-4-062917	EPA 903.1	264358		
0247863004	BAA-3-062917	EPA 903.1	264358		
0247863005	DUP-062917	EPA 903.1	264358		
60247863001	BAA-6-062917	EPA 904.0	264520		
60247863002	BAA-2-062917	EPA 904.0	264520		
0247863003	BAA-4-062917	EPA 904.0	264520		
60247863004	BAA-3-062917	EPA 904.0	264520		
0247863005	DUP-062917	EPA 904.0	264520		
60247863001	BAA-6-062917	Total Radium Calculation	265757		
60247863002	BAA-2-062917	Total Radium Calculation	265757		
0247863003	BAA-4-062917	Total Radium Calculation	265757		
0247863004	BAA-3-062917	Total Radium Calculation	265757		
0247863005	DUP-062917	Total Radium Calculation	265757		
0247863001	BAA-6-062917	SM 2540C	484031		
0247863002	BAA-2-062917	SM 2540C	484031		
0247863003	BAA-4-062917	SM 2540C	484031		
0247863004	BAA-3-062917	SM 2540C	484031		
0247863005	DUP-062917	SM 2540C	484031		
0247863001	BAA-6-062917	SM 4500-H+B	483928		
60247863002	BAA-2-062917	SM 4500-H+B	483928		
60247863003	BAA-4-062917	SM 4500-H+B	483928		
60247863004	BAA-3-062917	SM 4500-H+B	483969		
60247863005	DUP-062917	SM 4500-H+B	483928		
60247863001	BAA-6-062917	EPA 300.0	486562		
60247863001	BAA-6-062917	EPA 300.0	486575		
60247863002	BAA-2-062917	EPA 300.0	486562		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60247863

Date: 08/22/2017 12:55 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247863002	BAA-2-062917	EPA 300.0	486575		
60247863003	BAA-4-062917	EPA 300.0	486562		
60247863003	BAA-4-062917	EPA 300.0	486575		
60247863004	BAA-3-062917	EPA 300.0	486562		
60247863004	BAA-3-062917	EPA 300.0	486575		
60247863005	DUP-062917	EPA 300.0	486562		
60247863005	DUP-062917	EPA 300.0	486575		



Sample Condition Upon Receipt



Client Name: westor Energy	
Courier: FedEx □ UPS □ VIA ☑ Clay □ PEX □ ECI □	Pace ☐ Xroads ☐ Client ☐ Other ☐
Tracking #: Pace Shipping Label Us	sed? 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: T-266 / T(239) Type of Ice: Wet Blue I	
Cooler Temperature (°C): As-read 3-8/28 Corr. Factor CF +2.9 CF(+0.7 Corre	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	pr 7/1/17
Chain of Custody present:	Α
Chain of Custody relinquished: ☐Yes ☐No ☐N/	Α
Samples arrived within holding time:	
Short Hold Time analyses (<72hr):	A PH
Rush Turn Around Time requested:	Α
Sufficient volume:	Α
Correct containers used:	Α
Pace containers used: ☐Yes ☐No ☐N/	Α
Containers intact:	Α
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? ☐Yes ☐No ☑N/	Α
Filtered volume received for dissolved tests?	Α
Sample labels match COC: Date / time / ID / analyses	Α
Samples contain multiple phases? Matrix: ✓ 🗀 Yes 🗖 No 🗆 N/	Α
Containers requiring pH preservation in compliance?	Α
(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 turns dark? (Record only)	
Potassium iodide test strip turns blue/purple? (Preserve) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Trip Blank present: □Yes □No □N/	Α
Headspace in VOA vials (>6mm): □Yes □No □No	Α
Samples from USDA Regulated Area: State: □Yes □No ØN/	Α
Additional labels attached to 5035A / TX1005 vials in the field?	Α
Client Notification/ Resolution: Copy COC to Client? Y / N	Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	
P P	
Project Manager Review: D	ate: <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.

ection equire	n A ed Client Information:	Section I Required		Inform	nation:					Secti Invoic	e Infor	_															Page:	1	of	/	
ompar	ny: WESTAR ENERGY	Report To:	Brai	ndon (Griffin					Attent	ion:	Jai	red M	orris	on															50.	
ddress	818 Kansas Ave	Сору То:	Jare	d Mo	rrison, He	eath Horr	nya			Comp	any Na	ame:	WES	STAR	ENE	ERG	Ϋ́				REG	UL	ATOI	RY A	GEN	CY					
	Topeka, KS 66612									Addre	ss:		SEE	SEC	TION	1 A					-	NP	DES		GRO	UND	WATE	R 🗆	DRINKI	NG WA	ER
mail To	o: brandon.l.griffin@westarenergy.	com Purchase	Order I	No.:						Pace C												UST	Г		RCR	A		Γ	OTHER		
hone:	(785) 575-8135 Fax:	Project Na	me:	JEC	CCR Gro	oundwate	er			Pace F Manag	Project	He	ather	Wils	son, 9	913-	563-	1407		T	Site	e Lo	catio	n							
Reques	sted Due Date/TAT: 7 DAY	Project Nu	ımber.	-		-					Profile #	[#] 96	57, 1									S	TATE			KS	_ [
			-	-				_		_	_		_			T		Rec	ues	ted A	nal	ysis	Filte	red	(Y/N)		VIII				
	Section D Valid II Required Client Information MATRIX	Matrix Codes	o left)	MP)		COLL	ECTED					Pre	eserva	atives	s		N /A														
	DRINKIN WATER WASTE' PRODUC SOIL/SO OIL WIPE	WT NATER WW T P	(see valid codes to left)	(G=GRAB C=COMP)	COMPO		COMPOS END/GR	SITE RAB	T COLLECTION	ERS							Test4	Metals**	Mercury	804							rine (Y/N)				
ITEM #	(A-Z, 0-9 / ,-) OTHER Sample IDs MUST BE UNIQUE TISSUE	AR OT TS	MATRIX CODE	SAMPLE TYPE (DATE	TIME	DATE	TIME	SAMPLE TEMP AT	# OF CONTAINERS	Unpreserved	H₂SO₄ HNO₃	HCI	NaOH Na ₂ S ₂ O ₃	Methanol		lysis	200.7 Total Metals**	245.1 Total M	C,F	4500 H+B	2540C TDS	Radium 226	יממומווו לכס			Residual Chlorine (Y/N)	Pace	Projec	t No./ L	ab I.D.
1	BAA-6-062917		WT	6			6/291	1001		4	T	3		Ī	П	П												IBPZU	36	3PIN	aj
2	RAA-2-062917			6			6/29	1152		4	1	3																		1	ar
3	BAA-4-062917			6			6/29	1313		4	1	3																			CV3
4	18AA-3-062917		wī	6			6/29	1432		14	(3														4				*	cvy
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10	Dup-062917		W	6			6/29	0600	-	14	14	3	1	+	+	\dashv	1	+	+	+	\vdash	-	+	+	+	+	+	1/		V_{-}	103
11			_						-	⊢	\vdash	+	\vdash	-	+	\dashv	1	+	+	\vdash		-	+	+	+	+	+				
12									1		7115	+	Н		GCEP	TED	BY (AEEII	AATIC	NI NI	Н		ATE	+	TIME			SAM	PLE CON	DITIONS	
	ADDITIONAL COMMENTS		RE	LINQU	ISHED BY			DATE		_	TIME		1	1	A	IEU	171	1-	ATIC	/N			1	10		_		4			~
	7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	18	2)	1	/w.	estr		6/30	/17	16	,00	4	У	ν_{l}	M	M	yv	N	_			1	<u> </u>	1	090		4/10	7	1	+	
**200	8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl									-	7	+	_/								-			+		\dashv	30		7	+	<u>/</u>
	Po																							1						1	
	age .					SAMPL	ER NAME	AND SIGN	ATU	RE											III (5					ပ်	uo p P (V	Sealed		Inlac I)
	41 of						PRINT Nan		_		300	nd	X	(50	H	19		E Sin	ned	-	/_	/			_	Temp in	Received on Ice (Y/N)	Custody S		Samples Intact (Y/N)
	f 43						SIGNATUR	RE of SAME	PLER	12	12	7/						(MN	/DD/	(Y): (06/	30	11-	7			_	~	ÖÖ		တ္တ

Chain of Custody



		r: 60247863	Workorder	Name:JEC CCI		/ATER		0)wnei	r Red	eive	d Date	e: 7/1/2()17	Results	Requested By	v: 7/26/2017
	ort To			Subcontra	ct To						200 400	1920 (15) (2	Rec	uestec	Analysis	ar versaliera (18 apret verbreur	Bushing State of the Control of the
Pace 9608 Lene	B Loiret exa, KS	tical Kansas		1638 : Suites Greer	Analytical Pittst Roseytown Roa s 2,3, & 4 isburg, PA 156 e (724)850-5600	ad 01	Prese	nved.	Conta	inare	Radium-228					23450	
,, a t.						n linguage		I N.Eu	Conta	ille12		adium-	303	3572 1		-yyyy	
ltem	Sampl	e ID	Sample Type	Collect Date/Time	Lab ID	Matrix	AMAGE THE PARTY OF		Miles	III and beautiful and the second	this to make the same of the s	Rad	ACCOUNTS AND ACCOU		ZTREE/MANIALITMANIIIIIIIIII	ALEA-MAINT-MAT-PROPERTIES SERVICE SERV	LAB USE ONLY
1	BAA-6-0	32917	PS	6/29/2017 10:01	60247863001	Water	2				$\frac{1}{x}$	X					LAB USE ONLY
2	BAA-2-0	52917	PS	6/29/2017 11:52	60247863002	Water	2				$\frac{1}{x}$						
3	BAA-4-0	52917	PS	6/29/2017 13:13	60247863003	Water	2				$\frac{1}{x}$						QU
4	BAA-3-0	52917	PS	6/29/2017 14:32	60247863004	Water	2				$\frac{1}{x}$	┩				The second secon	<u> </u>
5	DUP-062	917	PS	6/29/2017 06:00	60247863005	Water	2	1			$\frac{1}{x}$			+			<u> </u>
1155	lanel († 15)	engalija ukrājens	tapa isotopyli skudeta		Zierolijek zarekom	vote sio kilo dec	sistem (Alexille) yan		0.0001.015(0)			1/1			Com	ıments	005
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***!~	00000	ta maintain allan		·	_												

^{**}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 P	ittsb	urgh	٦	5507 m 650 650 m 19 ⁵⁰⁴ (² 3
					30223450
Pâce Analytical Client Name:		P	ice	, KS	Project #
÷	,,				Ann.
Courier: Fed Ex UPS USPS Client		omme	rcial	Pace Other	Label 11 VV
Tracking #: 1265 6543 189	5	_			LIMS Login /+/\/_
Custody Seal on Cooler/Box Present: Jyes	n	10	Seals	s intact:	no
Thermometer Used	Type	of Ice:	We	t Blue (None)	
Cooler Temperature Observed Temp	REGRESS	°C	Corr	ection Factor:	°C Final Temp: °C
Temp should be above freezing to 6°C					Date and Initials of person examining
Comments	Yes	No	N/A	٦	Date and Initials of person examining contents 1917
Comments;	Yes	INO	IN/A		
Chain of Custody Present:		ļ <u>-</u>		1.	
Chain of Custody Filled Out:	1			2.	
Chain of Custody Relinquished:	100	\		3.	
Sampler Name & Signature on COC:	∇			4,	
Sample Labels match COC:	199	<u> </u>	<u> </u>	5.	
-Includes date/time/ID Matrix: \(\frac{1}{2}\)		· · · · · ·	T		
Samples Arrived within Hold Time:		~		6.	
Short Hold Time Analysis (<72hr remaining):				7.	
Rush Turn Around Time Requested:				8.	
Sufficient Volume:	(9.	
Correct Containers Used:	>			10.	
-Pace Containers Used:	>				
Containers Intact:				11.	
Orthophosphate field filtered			- 25	12.	
Organic Samples checked for dechlorination:			X	13.	
Filtered volume received for Dissolved lests All containers have been checked for preservation.				14.	
nii comainera nave been checked to preservation.				15. OH17.	
All containers needing preservation are found to be in compliance with EPA recommendation.	X	-		11100	
•				Initial when (100 A	Date/time of
exceptions: VOA, coliform, TOC, O&G, Phenolics				completed (X I	preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			X	16.	
Trip Blank Present:		X		17.	
Trip Blank Custody Seals Present			X_{-}		
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when CO	Date: 7-6-17
Client Notification/ Resolution:				1	1- 1- 1 U 1 1
Person Contacted:			Date/1	Пте:	Contacted By:
Comments/ Resolution:			, ,		

 $\ \square$ A check in this box indicates that additional information has been stored 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 1-9
July 2017 Sampling Event
Laboratory Analytical Report





August 10, 2017

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

RE: Project: JEC CCR Groundwater

Pace Project No.: 60248974

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on July 19, 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.: 60248974

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.: 60248974

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60248974001	BAA-7-071817	Water	07/18/17 08:30	07/19/17 08:35
60248974002	DUP-071817	Water	07/18/17 06:00	07/19/17 08:35



SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60248974001	BAA-7-071817	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60248974002	DUP-071817	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Method: EPA 200.7

Description: 200.7 Metals, Total **Client:** WESTAR ENERGY **Date:** August 10, 2017

General Information:

2 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: 487074

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60248973001

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

- MSD (Lab ID: 1994911)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 10, 2017

General Information:

2 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.

QC Batch: 487056

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 7570332001

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

• MSD (Lab ID: 1994804)

Molybdenum

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 10, 2017

General Information:

2 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: 486931

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60248730001,60249386003

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

- MS (Lab ID: 1994331)
 - Mercury



PROJECT NARRATIVE

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** August 10, 2017

General Information:

2 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.: 60248974

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** August 10, 2017

General Information:

2 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.: 60248974

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:August 10, 2017

General Information:

2 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.: 60248974

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: August 10, 2017

General Information:

2 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.: 60248974

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 10, 2017

General Information:

2 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-7-071817 (Lab ID: 60248974001)
- DUP-071817 (Lab ID: 60248974002)

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.: 60248974

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 10, 2017

General Information:

2 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.: 60248974

Date: 08/10/2017 11:52 AM

Sample: BAA-7-071817	Lab ID: 602	248974001	Collected: 07/18/1	7 08:30	Received: 07	/19/17 08:35 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	0.041	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:23	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/09/17 12:23	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1	07/26/17 12:10	08/09/17 12:23	7440-42-8	
Calcium, Total Recoverable	235	mg/L	0.10	1	07/26/17 12:10	08/09/17 12:23	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:23	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/26/17 12:10			
ithium	0.011	mg/L	0.010	1	07/26/17 12:10	08/09/17 12:23	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	07/26/17 12:10	08/03/17 16:53	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:53	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/26/17 12:10	08/03/17 16:53	7440-43-9	
Cobalt, Total Recoverable	0.0011	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:53	7440-48-4	
Molybdenum, Total Recoverable	0.062	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:53	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:53	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:53	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	07/25/17 17:15	07/26/17 16:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1760	mg/L	5.0	1		07/20/17 13:31		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	O-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		07/20/17 12:30		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	190	mg/L	20.0	20		08/05/17 20:51	16887-00-6	
Fluoride	0.73	mg/L	0.20	1		08/04/17 20:46	16984-48-8	
Sulfate	927	mg/L	100	100		08/05/17 21:04		



ANALYTICAL RESULTS

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Date: 08/10/2017 11:52 AM

Sample: DUP-071817	Lab ID: 602	248974002	Collected: 07/18/1	7 06:00	Received: 07	/19/17 08:35 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	0.16	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:37	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/09/17 12:37	7440-41-7	
Boron, Total Recoverable	0.19	mg/L	0.10	1	07/26/17 12:10	08/09/17 12:37	7440-42-8	
Calcium, Total Recoverable	131	mg/L	0.10	1	07/26/17 12:10	08/09/17 12:37	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:37	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/26/17 12:10			
ithium	0.025	mg/L	0.010	1	07/26/17 12:10	08/09/17 12:37	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	07/26/17 12:10	08/03/17 16:59	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:59	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/26/17 12:10	08/03/17 16:59	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:59	7440-48-4	
Molybdenum, Total Recoverable	0.063	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:59	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:59	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:59	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	07/25/17 17:15	07/26/17 16:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1820	mg/L	5.0	1		07/20/17 13:32		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		07/20/17 12:25		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	189	mg/L	20.0	20		08/05/17 21:16	16887-00-6	
Fluoride	0.78	mg/L	0.20	1		08/04/17 21:01	16984-48-8	
Sulfate	942	mg/L	100	100		08/05/17 21:29	14808-79-8	



Project: JEC CCR Groundwater

Pace Project No.: 60248974

Date: 08/10/2017 11:52 AM

QC Batch: 486931 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1994327 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 07/26/17 15:23

LABORATORY CONTROL SAMPLE: 1994328

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0048 97 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1994329 1994330

MS MSD 60248730001 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 Mercury mg/L .005 .005 0.0049 98 100

MATRIX SPIKE SAMPLE: 1994331

60249386003 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers ND 47 70-130 M1 Mercury mg/L .005 0.0024

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.: 60248974

Date: 08/10/2017 11:52 AM

QC Batch: 487074 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1994908 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/09/17 12:09	
Beryllium	mg/L	< 0.0010	0.0010	08/09/17 12:09	
Boron	mg/L	<0.10	0.10	08/09/17 12:09	
Calcium	mg/L	<0.10	0.10	08/09/17 12:09	
Chromium	mg/L	< 0.0050	0.0050	08/09/17 12:09	
Lead	mg/L	< 0.0050	0.0050	08/09/17 12:09	
Lithium	mg/L	< 0.010	0.010	08/09/17 12:09	

LABORATORY CONTROL SAMPLE:	1994909					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
	-					
Barium	mg/L	1	0.93	93	85-115	
Beryllium	mg/L	1	0.94	94	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.5	95	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	0.99	99	85-115	
Lithium	mg/L	1	0.96	96	85-115	

MATRIX SPIKE & MATRIX SPI	KE DUPLICA	TE: 19949	10		1994911							
Parameter	6 Units	0248973001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.067	1	1	1.1	0.99	106	92	70-130	13	20	
Beryllium	mg/L	< 0.0010	1	1	1.0	0.95	103	95	70-130	8	20	
Boron	mg/L	2.9	1	1	4.1	3.8	115	85	70-130	8	20	
Calcium	mg/L	137	10	10	144	143	75	57	70-130	1	20	M1
Chromium	mg/L	< 0.0050	1	1	0.98	0.95	98	95	70-130	3	20	
Lead	mg/L	< 0.0050	1	1	0.97	0.93	97	92	70-130	5	20	
Lithium	mg/L	0.012	1	1	1.1	1.0	114	101	70-130	11	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.: 60248974

Date: 08/10/2017 11:52 AM

QC Batch: 487056 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1994801 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/28/17 13:09	
Arsenic	mg/L	< 0.0010	0.0010	07/28/17 13:09	
Cadmium	mg/L	< 0.00050	0.00050	07/28/17 13:09	
Cobalt	mg/L	< 0.0010	0.0010	07/28/17 13:09	
Molybdenum	mg/L	< 0.0010	0.0010	07/28/17 13:09	
Selenium	mg/L	< 0.0010	0.0010	07/28/17 13:09	
Thallium	mg/L	<0.0010	0.0010	07/28/17 13:09	

LABORATORY CONTROL SAMPLE:	1994802					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.039	97	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.039	98	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.039	96	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLIC	CATE: 199480	03		1994804							
			MS	MSD								
		7570332001	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	0.040	0.040	98	98	70-130	0	20	
Arsenic	mg/L	3.1 ug/L	.04	.04	0.042	0.042	97	97	70-130	0	20	
Cadmium	mg/L	ND	.04	.04	0.035	0.035	88	87	70-130	1	20	
Cobalt	mg/L	79.4 ug/L	.04	.04	0.12	0.12	95	102	70-130	2	20	
Molybdenum	mg/L	919 ug/L	.04	.04	0.95	0.98	80	151	70-130	3	20	M1
Selenium	mg/L	0.024	.04	.04	0.060	0.062	90	94	70-130	3	20	
Thallium	mg/L	ND	.04	.04	0.033	0.033	82	81	70-130	1	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.: 60248974

QC Batch: 486350 Analysis Method: SM 2540C

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

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1991663 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 07/20/17 13:28

LABORATORY CONTROL SAMPLE: 1991664

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 975 97 80-120

SAMPLE DUPLICATE: 1991665

60249032001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 847 822 3 10 **Total Dissolved Solids** mg/L

SAMPLE DUPLICATE: 1991667

Date: 08/10/2017 11:52 AM

60248961006 Dup Max RPD RPD Parameter Units Result Result Qualifiers 284 **Total Dissolved Solids** mg/L 268 6 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.: 60248974

QC Batch: 486204 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60248974001, 60248974002

SAMPLE DUPLICATE: 1991124

Date: 08/10/2017 11:52 AM

 Parameter
 Units
 Result Result
 Result RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 6.7
 6.7
 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.: 60248974

Date: 08/10/2017 11:52 AM

QC Batch: 488423 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1999945 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 08/04/17 14:10

LABORATORY CONTROL SAMPLE: 1999946

_		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	

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.: 60248974

Date: 08/10/2017 11:52 AM

QC Batch: 488537 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 2000532 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

Reporting Blank Result Limit Qualifiers Parameter Units Analyzed Chloride <1.0 08/05/17 16:58 mg/L 1.0 Sulfate mg/L <1.0 1.0 08/05/17 16:58

LABORATORY CONTROL SAMPLE: 2000533 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 95 90-110 mg/L

Chloride mg/L 5 4.8 95 90-110
Sulfate mg/L 5 4.8 95 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2000534 2000535

MSD MS 60249497001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Sulfate mg/L 428 250 250 670 667 97 95 80-120 0 15

MATRIX SPIKE SAMPLE: 2000536 % Rec 60249555023 MS MS Spike Parameter % Rec Qualifiers Units Result Conc. Result Limits 29.8 Chloride 25 54.3 98 80-120 mg/L Sulfate 38.5 25 62.4 96 80-120 mg/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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Sample: BAA-7-071817 PWS:	Lab ID: 602489 Site ID:	74001 Collected: 07/18/17 08:30 Sample Type:	Received:	07/19/17 08:35	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.259 ± 0.476 (0.849) C:NA T:97%	pCi/L	08/02/17 21:36	13982-63-3	
Radium-228	EPA 904.0	1.23 ± 0.518 (0.870) C:81% T:82%	pCi/L	08/02/17 11:33	15262-20-1	
Total Radium	Total Radium Calculation	1.49 ± 0.994 (1.72)	pCi/L	08/04/17 11:13	3 7440-14-4	



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60248974

Sample: DUP-071817 PWS:	Lab ID: 602489 Site ID:	74002	Collected: 07/18/17 06:00 Sample Type:	Received:	07/19/17 08:35	Matrix: Water	
Parameters	Method	Ac	t ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1		± 0.522 (0.822) T:94%	pCi/L	08/02/17 21:24	13982-63-3	
Radium-228	EPA 904.0		± 0.572 (0.967) % T:79%	pCi/L	08/02/17 11:33	15262-20-1	
Total Radium	Total Radium Calculation	1.82	± 1.09 (1.79)	pCi/L	08/04/17 11:13	3 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater

Pace Project No.: 60248974

QC Batch: 265797 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1308986 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-2260.325 \pm 0.299 (0.176) C:NA T:96%pCi/L08/02/17 20:33

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.: 60248974

QC Batch: 265798 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60248974001, 60248974002

METHOD BLANK: 1308987 Matrix: Water

Associated Lab Samples: 60248974001, 60248974002

 Parameter
 Act \pm Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.412 \pm 0.422 (0.873) C:78% T:69%
 pCi/L
 08/02/17 11:28

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.: 60248974

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: 08/10/2017 11:52 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.: 60248974

Date: 08/10/2017 11:52 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60248974001 60248974002	BAA-7-071817 DUP-071817	EPA 200.7 EPA 200.7	487074 487074	EPA 200.7 EPA 200.7	487127 487127
60248974001 60248974002	BAA-7-071817 DUP-071817	EPA 200.8 EPA 200.8	487056 487056	EPA 200.8 EPA 200.8	487128 487128
60248974001 60248974002	BAA-7-071817 DUP-071817	EPA 245.1 EPA 245.1	486931 486931	EPA 245.1 EPA 245.1	487027 487027
60248974001 60248974002	BAA-7-071817 DUP-071817	EPA 903.1 EPA 903.1	265797 265797		
60248974001 60248974002	BAA-7-071817 DUP-071817	EPA 904.0 EPA 904.0	265798 265798		
60248974001 60248974002	BAA-7-071817 DUP-071817	Total Radium Calculation Total Radium Calculation	267334 267334		
60248974001 60248974002	BAA-7-071817 DUP-071817	SM 2540C SM 2540C	486350 486350		
60248974001 60248974002	BAA-7-071817 DUP-071817	SM 4500-H+B SM 4500-H+B	486204 486204		
60248974001	BAA-7-071817	EPA 300.0	488423		
60248974001	BAA-7-071817	EPA 300.0	488537		
60248974002	DUP-071817	EPA 300.0	488423		
60248974002	DUP-071817	EPA 300.0	488537		



Sample Condition Upon Receipt



Client Name: Wgfar Energy			
Courier: FedEx UPS VIA Clay C	PEX □ ECI □	Pace □ Xroads	☐ Client ☐ Other ☐
Tracking #: Pa	ace 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	□ p Foam □	None (Other □
Thermometer Used: CF +2.9 CP +0.2 T-266 / (-239) Type of	of Ice: (Vet Blue No	ne	Data and initials of sames
Cooler Temperature (°C): As-read	ctor CF +2.9 CF +8.2 correct	ted <u>3.6</u>	Date and initials of person examining contents:
Temperature should be above freezing to 6°C			P 7/19/17
Chain of Custody present:	Øyes □No □N/A		y ==="
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 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	Yes No N/A		
Samples contain multiple phases? Matrix:	Yes No 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:			
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 □Nø □N/A		
Samples from USDA Regulated Area: State:	□Yes □No □N/A		
Additional labels attached to 5035A / TX1005 vials in the fiel	ld? □Yes □No □N/A	:2	
Client Notification/ Resolution: Copy COC	to Client? Y / N	Field Data Requir	red? Y / N
Person Contacted: Date	/Time:		
Comments/ Resolution:			*
Anul		Mala	
Project Manager Review:	Date	e: //M///	-



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section Require	A dient Information:		Section B Required Pr	oject Info	mation:						tion C		n:												P	age;		of)
Compan	WESTAR ENERG	Υ	Report To:	Brando	Griffin					Atten	ntion:	Ja	ared I	Morri	son														
Address	818 Kansas Ave		Сору То:	Jared N	lorrison, F	leath Hor	nya			Com	pany N	lame:	WE	STA	R EN	ERG	Υ			RI	EGU	LATO	RY	AGENO	CY				
	Topeka, KS 6661	2								Addn	ess:		SEI	E SE	CTION	ΙA				V	NI	PDES	-	GRO	UND V	NATE	RT	DRINKING	WATER
Email To	brandon.l.griffin@	westarenergy.com	Purchase Or	der No.:						Pace Refer	Quote										Û	ST	í.	RCRA	4		<i>=</i> c	OTHER	+1
Phone:	(785) 575-8135 Fax		Project Nam	e: JE	C CCR G	roundwat	er				Project	Н	eath	er Wil	lson, 9	313-	563-	1407		5	ite L	ocatio	on			P			
Reques	ed Due Date/TAT: 7 DA	Ϋ́	Project Num	ber:							Profile	#: 90	657,	1						1		STAT	E:	- K	S	_			
												-	_	-		1		Requ	este	d An	alys	is Fill	ered	(Y/N)	X E	7///			
	Section D Required Client Information	Valid Matrix MATRIX	CODE	codes to left)		COLL	ECTED		Γ			Pr	esen	vative	s	N/A				Ţ	Ĺ		I	П					
		DRINKING WATE WATER WASTE WATER PRODUCT SOIL/SOLID	WT WW P SL	valid (AB	COMF ST#	POSITE ART	COMPO END/G	SITE RAB	COLLECTION								**	**	ury					- 1		(\/\)	602	489.	74
*	SAMPLE II (A-Z, 0-9 / ,-) Sample IDs MUST BE UI	OTHER	OL WP AR OT TS	CODE		*			TEMP AT	CONTAINERS	Unpreserved	24	5	NaOH NaoSoO,	Methanol	Uther Toot	Total	8 Total Metals**		300.0 CI, FI, SO4 4500 H+B	2540C TDS	Radium 226	Kadıum 228			Residual Chlorine (Y/N)			
ITEM			1	MATRIX	DATE	TIME	DATE	TIME	SAMPLE	# OF	Unpi	H ₂ SO ₄	일	Nao	Met	Other	200.7	200.8	245.	0 0	54	Radi	g			Resi	Pace F	Project N	o./ Lab I.D.
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Page						SAMPL	ER NAME	AND SIGN	ATU	RE	a) i								Ž.	4.	_			8		ပ္	E 0 7	ealed (/N)	Intact
Page 30 of 32							PRINT Nar	ne of SAMI RE of SAMI	_		3/2	V	~	G	nit	8	6	DATE	Signe	id 0	7/	8/	17			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Chain of Custody



APPENDENCE OF THE PERSON NAMED AND ADDRESS OF THE PERSON NAMED ADDRESS OF THE PERSON NAMED AND	ort To	Korder i	Name:JEC CC Subcontra		er Statistics		Owr	er Rece	ived	Dat	e: 7	/19/2017		By: 8/10/2017
Pac 9608 Lene	ther Wilson e Analytical Kansas 3 Loiret Blvd. exa, KS 66219 ne 1(913)563-1407	A Comment of the Comm	Pace 1638 Suites Greer	Analytical Pittst Roseytown Ros 5 2,3, & 4 Isburg, PA 156 6 (724)850-5600	ad 01				adium-228	.226 & Total Radium			30224687	
Item	Sample ID	Sample Type	Collect Date/Time	LabID	Matrix	Pres EONH	erved Coi	ntainers	Ŗ	Radium-2	3.0	224687		
1	BAA-7-071817	PS	7/18/2017 08:30	60248974001	Water	2			\downarrow_{X}	X				LAB USE ONLY
2	DUP-071817	PS	7/18/2017 06:00	60248974002	Water	2			$\frac{1}{x}$	X				001
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/n	order to maintain client confic	lentiality.	location/name	of the sampli	na sita si	- molect	0 0000		,	*******			Samples illiact	Y or N

Weanesday, July 19, 2017 1:31:20 PM

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 Red	ceipt F	Pitts	our	gh
FaceAnalytical Client Name:	- vista	(P	70	Project # 0 2 2 4 6 8
Courier: DFed Ex OUPS OUSPS OCIA Tracking #: 7285 (594 40	091	-	ercial	Pace Other Label 7.14.
Custody Seal on Cooler/Box Present:		ก็ด	Sea	als Intact:
Thermometer Used	Туре	of Ice	: W	et Blue None
Cooler Temperature Observed Temp		°C	Co	rection Factor: °C Final Temp: °C
Temp should be above freezing to 6°C				with a single of a single of the single of t
				Date and Initials of person examining contents:
Comments:	Yes	No	N//	
Chain of Custody Present:	+-	ļ	<u> </u>	1,
Chain of Custody Filled Out:	1		ļ	2.
Chain of Custody Reilinquished:	14		<u> </u>	3.
Sampler Name & Signature on COC:				4.
Sample Labels malch COC:			Ĺ	5.
-Includes date/time/ID Matrix:	آتم			
Samples Arrived within Hold Time:				6.
Short Hold Time Analysis (<72hr remaining):				7.
Rush Turn Around Time Requested:				8.
Sufficient Volume:				9,
Correct Containers Used:				10.
-Pace Containers Used:				
Containers Intact:	/			11.
Orthophosphate fleld filtered		The section		12.
Organic Samples checked for dechlorination:				13.
Fillered volume received for Dissolved tests		_	مسيد	14.
All containers have been checked for preservation,				15.
All containers needing preservation are found to be in compilance with EPA recommendation.				7H-2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when Date/lime of completed 7.4 preservation Lot # of added preservative
leadspace in VOA Vials (>6mm):				16.
rip Blank Present:			/	17.
rip Blank Custody Seals Present			1	
Rad Aqueous Samples Screened > 0,5 mrem/hr		7	- 1	nilial when 2+ Date: 712017
llent Notification/ Resolution:	······			August and a second a second and a second an
Person Contacled:		Da	ale/Ti	me: Contacted By:
Comments/ Resolution:				
				
A check in this box indicates that addition	onal inf	ormat	tion	nas been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compiliance 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.



August 21, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on July 28, 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.: 60249713

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

Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

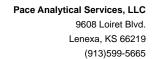
Wyoming Certification #: 8TMS-L

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.: 60249713

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60249713001	BAA-7-072717	Water	07/27/17 13:31	07/28/17 08:00



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60249713001	BAA-7-072717	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	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	JMC1	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Method: EPA 200.7

Description: 200.7 Metals, Total **Client:** WESTAR ENERGY **Date:** August 21, 2017

General Information:

1 sample was 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: 487830

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249708001

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

- MS (Lab ID: 1997598)
 - Calcium
- MSD (Lab ID: 1997599)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 21, 2017

General Information:

1 sample was 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.: 60249713

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 21, 2017

General Information:

1 sample was 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: 490179

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249708001,60249708002

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

- MS (Lab ID: 2006567)
 - Mercury
- MS (Lab ID: 2006569)
 - Mercury
- MSD (Lab ID: 2006568)
 - Mercury

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** August 21, 2017

General Information:

1 sample was 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.: 60249713

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** August 21, 2017

General Information:

1 sample was 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.: 60249713

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:August 21, 2017

General Information:

1 sample was 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.: 60249713

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: August 21, 2017

General Information:

1 sample was 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.: 60249713

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 21, 2017

General Information:

1 sample was 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-7-072717 (Lab ID: 60249713001)

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.: 60249713

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 21, 2017

General Information:

1 sample was 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.: 60249713

Date: 08/21/2017 12:34 PM

Sample: BAA-7-072717	Lab ID: 602	249713001	Collected: 07/27/1	7 13:31	Received: 07	7/28/17 08:00 N	/latrix: 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	0.037	mg/L	0.0050	1	07/31/17 16:51	08/13/17 15:41	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/31/17 16:51	08/13/17 15:41	7440-41-7	
Boron, Total Recoverable	1.1	mg/L	0.10	1	07/31/17 16:51	08/13/17 15:41	7440-42-8	
Calcium, Total Recoverable	256	mg/L	0.10	1	07/31/17 16:51	08/13/17 15:41	7440-70-2	
Chromium, Total Recoverable	< 0.0050	mg/L	0.0050	1	07/31/17 16:51	08/13/17 15:41	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	07/31/17 16:51	08/13/17 15:41	7439-92-1	
Lithium	0.013	mg/L	0.010	1	07/31/17 16:51	08/13/17 15:41	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	07/31/17 10:19	08/03/17 17:39	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:39	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/31/17 10:19	08/03/17 17:39	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:39	7440-48-4	
Molybdenum, Total Recoverable	0.063	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:39	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:39	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:39	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	08/16/17 19:00	08/17/17 09:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	1790	mg/L	5.0	1		08/02/17 15:30		
1500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		08/02/17 15:30		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	190	mg/L	20.0	20		08/06/17 23:41	16887-00-6	
Fluoride	0.90	mg/L	0.20	1		08/05/17 23:45	16984-48-8	
Sulfate	912	mg/L	100	100		08/06/17 23:54	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Date: 08/21/2017 12:34 PM

QC Batch: 490179 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60249713001

METHOD BLANK: 2006565 Matrix: Water

Associated Lab Samples: 60249713001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 08/17/17 09:18

LABORATORY CONTROL SAMPLE: 2006566

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0052 104 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2006567 2006568

MS MSD 60249708001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0027 70-130 20 M1 Mercury mg/L < 0.000024 .005 .005 0.0027 54 54

MATRIX SPIKE SAMPLE: 2006569

60249708002 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.000024 70-130 M1 Mercury mg/L .005 0.0025 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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Date: 08/21/2017 12:34 PM

QC Batch: 487830 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60249713001

METHOD BLANK: 1997596 Matrix: Water

Associated Lab Samples: 60249713001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/13/17 15:20	
Beryllium	mg/L	< 0.0010	0.0010	08/13/17 15:20	
Boron	mg/L	<0.10	0.10	08/13/17 15:20	
Calcium	mg/L	<0.10	0.10	08/13/17 15:20	
Chromium	mg/L	< 0.0050	0.0050	08/13/17 15:20	
Lead	mg/L	< 0.0050	0.0050	08/13/17 15:20	
Lithium	mg/L	<0.010	0.010	08/13/17 15:20	

LABORATORY CONTROL SAMPLE:	1997597					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.0	102	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	0.97	97	85-115	
Calcium	mg/L	10	9.6	96	85-115	
Chromium	mg/L	1	0.98	98	85-115	
_ead	mg/L	1	1.0	104	85-115	
ithium	mg/L	1	1.1	108	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 19975	98		1997599							
			MS	MSD								
	6	0249708001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.12	1	1	1.1	1.2	100	104	70-130	4	20	
Beryllium	mg/L	< 0.00016	1	1	0.98	1.0	98	104	70-130	6	20	
Boron	mg/L	1.8	1	1	2.8	2.8	98	105	70-130	3	20	
Calcium	mg/L	480	10	10	508	587	280	1070	70-130	15	20	M1
Chromium	mg/L	0.0015J	1	1	1.0	1.0	101	103	70-130	1	20	
Lead	mg/L	<0.0048	1	1	0.89	0.90	89	90	70-130	1	20	
Lithium	mg/L	0.42	1	1	1.5	1.5	111	105	70-130	5	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.: 60249713

Date: 08/21/2017 12:34 PM

QC Batch: 487637 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60249713001

METHOD BLANK: 1997155 Matrix: Water

Associated Lab Samples: 60249713001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/01/17 10:32	
Arsenic	mg/L	< 0.0010	0.0010	08/01/17 10:32	
Cadmium	mg/L	< 0.00050	0.00050	08/01/17 10:32	
Cobalt	mg/L	< 0.0010	0.0010	08/01/17 10:32	
Molybdenum	mg/L	< 0.0010	0.0010	08/01/17 10:32	
Selenium	mg/L	< 0.0010	0.0010	08/01/17 10:32	
Thallium	mg/L	<0.0010	0.0010	08/01/17 10:32	

LABORATORY CONTROL SAMPLE:	1997156					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.040	99	85-115	
Arsenic	mg/L	.04	0.040	100	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.040	99	85-115	
Molybdenum	mg/L	.04	0.040	100	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.036	91	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	TE: 19971	57		1997158							
			MS	MSD								
	6	0249776001	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	0.040	0.040	97	98	70-130	1	20	
Arsenic	mg/L	57.9 ug/L	.04	.04	0.099	0.099	103	102	70-130	1	20	
Cadmium	mg/L	ND	.04	.04	0.038	0.038	95	94	70-130	2	20	
Cobalt	mg/L	7.3 ug/L	.04	.04	0.046	0.046	96	96	70-130	1	20	
Molybdenum	mg/L	ND	.04	.04	0.042	0.042	102	103	70-130	0	20	
Selenium	mg/L	ND	.04	.04	0.038	0.041	94	100	70-130	6	20	
Thallium	mg/L	ND	.04	.04	0.036	0.037	90	91	70-130	1	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.: 60249713

QC Batch: 488160 Analysis Method: SM 2540C

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

Associated Lab Samples: 60249713001

METHOD BLANK: 1998724 Matrix: Water

Associated Lab Samples: 60249713001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/02/17 15:27

LABORATORY CONTROL SAMPLE: 1998725

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

SAMPLE DUPLICATE: 1998726

60249753001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 686 2 10 **Total Dissolved Solids** 697 mg/L

SAMPLE DUPLICATE: 1998727

Date: 08/21/2017 12:34 PM

60249753005 Dup Max RPD RPD Parameter Units Result Result Qualifiers 666 **Total Dissolved Solids** mg/L 656 2 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.: 60249713

QC Batch: 487921 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60249713001

SAMPLE DUPLICATE: 1997822

Date: 08/21/2017 12:34 PM

 Parameter
 Units
 Result Result Result
 RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 6.2
 6.2
 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.: 60249713

Date: 08/21/2017 12:34 PM

QC Batch: 488540 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60249713001

METHOD BLANK: 2000546 Matrix: Water

Associated Lab Samples: 60249713001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 08/05/17 17:38

LABORATORY CONTROL SAMPLE: 2000547

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

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.: 60249713

Date: 08/21/2017 12:34 PM

QC Batch:

488592 QC Batch Method: EPA 300.0

Analysis Method:

EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60249713001

2000742 METHOD BLANK: Matrix: Water

Associated Lab Samples: 60249713001

Blank Reporting Limit Parameter Units Result Qualifiers Analyzed Chloride <1.0 1.0 08/06/17 20:14 mg/L Sulfate mg/L <1.0 1.0 08/06/17 20:14

LABORATORY CONTROL SAMPLE: 2000743

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 97 90-110 mg/L Sulfate mg/L 5 4.8 97 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2000744 2000745 MSD MS 60249708001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 14300 5000 5000 20000 19800 115 111 80-120 15 Sulfate mg/L 619 500 500 1070 1080 90 93 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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

Sample: BAA-7-072717 PWS:	Lab ID: 602497 ′ Site ID:	3001 Collected: 07/27/17 13:31 Sample Type:	Received:	07/28/17 08:00	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.387 ± 0.329 (0.407) C:NA T:93%	pCi/L	08/16/17 10:46	13982-63-3	
Radium-228	EPA 904.0	0.361 ± 0.314 (0.625) C:83% T:68%	pCi/L	08/11/17 15:21	15262-20-1	
Total Radium	Total Radium Calculation	0.748 ± 0.643 (1.03)	pCi/L	08/21/17 12:03	3 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

QC Batch: 267153 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60249713001

METHOD BLANK: 1315208 Matrix: Water

Associated Lab Samples: 60249713001

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

 Radium-226
 0.593 ± 0.503 (0.624) C:NA T:95%
 pCi/L
 08/16/17 10:12

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.: 60249713

QC Batch: 267154 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60249713001

METHOD BLANK: 1315209 Matrix: Water

Associated Lab Samples: 60249713001

 Parameter
 Act \pm Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.545 \pm 0.365 (0.699) C:77% T:82%
 pCi/L
 08/11/17 15:20

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.



QUALIFIERS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249713

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: 08/21/2017 12:34 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.: 60249713

Date: 08/21/2017 12:34 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60249713001	BAA-7-072717	EPA 200.7	487830	EPA 200.7	487911
60249713001	BAA-7-072717	EPA 200.8	487637	EPA 200.8	487864
60249713001	BAA-7-072717	EPA 245.1	490179	EPA 245.1	490214
60249713001	BAA-7-072717	EPA 903.1	267153		
60249713001	BAA-7-072717	EPA 904.0	267154		
60249713001	BAA-7-072717	Total Radium Calculation	268953		
60249713001	BAA-7-072717	SM 2540C	488160		
60249713001	BAA-7-072717	SM 4500-H+B	487921		
60249713001	BAA-7-072717	EPA 300.0	488540		
60249713001	BAA-7-072717	EPA 300.0	488592		



Sample Condition Upon Receipt



Client Name: WSfar 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	6 No 0
Packing Material: Bubble Wrap □ Bubble Bags □ Foam □	Nene □ Other □
Thermometer Used: T-266 T-239 Type of Ice: Wet Blue N	lone Date and initials of person
Cooler Temperature (°C): As-readCorr. FactorCorre	examining contents:
Temperature should be above freezing to 6°C	N + /29/17
Chain of Custody present: □Yes □No □N//	Collection dale on containers 7/27
Chain of Custody relinquished: ✓ Yes □No □N//	Α
Samples arrived within holding time: ✓ Yes □No □N//	Α
Short Hold Time analyses (<72hr):	PH
Rush Turn Around Time requested:	Α
Sufficient volume: Sufficient volume: Suffici	Α
Correct containers used: Yes □No □N//	Α
Pace containers used: Yes □No □N//	Α
Containers intact: ☐Yes ☐No ☐N//	A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	4
Filtered volume received for dissolved tests?	A
Sample labels match COC: Date / time / ID / analyses	4
Samples contain multiple phases? Matrix: // T □Yes □No □N/	4
Containers requiring pH preservation in compliance?	A
(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)	
Trip Blank present: □Yes □No □N//	3
Headspace in VOA vials (>6mm): □Yes □No □N//	A
Samples from USDA Regulated Area: State:	A
Additional labels attached to 5035A / TX1005 vials in the field?	4
Client Notification/ Resolution: Copy COC to Client? Y N	Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	
· ×	
Project Manager Review: Di	ate: 7/08/17



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

mpany: WESTAR ENERGY dress: 818 Kansas Ave Topeka, KS 66612 mail To: brandon.l.griffin@westarenergy.com Pur none: (785) 575-8135 Fax: Pro		ndon (ed Mor No.: JEC	Griffin rrison, He	ath Horn	ya			ttentio Compa	ny Nam			OTTAR		DGV				L								
Topeka, KS 66612 mail To: brandon.l.griffin@westarenergy.com prone: (785) 575-8135 Fax: Pro equested Due Date/TAT: 7 DAY Pro	chase Orde	No.: JEC		ath Horn	ya			ompa	ny Nan	ne: //	WES	TAR	FNE	DCV												
Topeka, KS 66612 mail To: brandon.l.griffin@westarenergy.com Pur hone: (785) 575-8135 Fax: Pro equested Due Date/TAT: 7 DAY Pro	ject Name:	JEC	CCR Gro				- 1.						LIVE	NG I				RE	GUL	ATORY	AGEN					
brandon.l.griffin@westarenergy.com Pur tione: (785) 575-8135	ject Name:	JEC	CCR Gro		ase Order No.:						SEE	SEC	TION	Α				Į₩.	NPI	DES	GR	DUND	WATE	R 🗆 D	RINKING V	/ATER
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Required Client Information MATRIX DRINKING WATER WATER WATER WASTE WATER PRODUCT POOL OIL OIL	sabor bilev see HOO	rype (G=GI	COMPO STAR		COMPOS' END/GR/	TE AB	LE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	3		203	anol	Other LAnalysis Test	7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	2	IC TDS	Radium 226 Radium 228			Residual Chlorine (Y/N)	602	1 9713	
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of 30					SIGNATU	RE of SAM	IPLER	u /	130	3	1	1				DATE	Signe DD/YY	ed O'	7/2	7/1	7			8	Cust	Ѕап

Chain of Custody



	korder: 60249713 Wo		Name:JEC CC Subcontra		ATER		Ow	ner Re	ceive	d Dat	e: 7/	28/2017			ested By:	8/21/2017
Heat Pace 9608 Lene	cher Wilson Analytical Kansas B Loiret Blvd. exa, KS 66219 ne 1(913)563-1407		Pace 1638 Suites Greer	Analytical Pittsb Roseytown Roa 5 2,3, & 4 Isburg, PA 156 6 (724)850-5600	d		Preserved Containers					Requested Analysis		 		
ltem	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Pres EONH	erved Co	ontainers	Padina-228	Radium-226						LAB USE ONLY
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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.

Courier: Fed Ex Dups Dusps Client Name; Courier: Fed Ex Dups Dusps Client Tracking #: Lov Custody Seal on Cooler/Box Present: Dyes Thermometer Used Cooler Temperature Observed Temp Temp should be above freezing to 6°C Comments: Chain of Custody Present: Chain of Custody Filled Out: Chain of Custody Relinquished: Sampler Name & Signature on COC:	enl ; "E	Con Ino pe of I	Seals Intact: Ce: Wet Blue C Correction F	yes		#		H.
Tracking #: 23 CO Custody Seal on Cooler/Box Present: Dyes Thermometer Used Cooler Temperature Observed Temp Temp should be above freezing to 6°C Comments: Chain of Custody Present: Chain of Custody Relinquished:	Ye	no pe of I	Seals intact: ce: Wet Blue Correction F	yes None	°C Fina	LIMS Log	in KM	·c
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Chain of Custody Filled Out: Chain of Custody Relinquished:	/		2.			· · · · · · · · · · · · · · · · · · ·		
Chain of Custody Relinquished;	/		3.					
Sampler Name & Signature on COC:	<u> </u>	/-						
	<u> </u>		4,					
Sample Labels match COC:		1	6.					
Samples Arrived within Hold Time:			6,		·	.,,		
Short Hold Time Analysis (<72hr remaining):	-		7.					
Rush Turn Around Time Requested:			8,			1.		\neg
Sufficient Volume:	\dashv		9,	<u>`</u>		·-·		
Correct Containers Used;	$\overline{}$		10,					
-Pace Containets Used:	-		1,,					\dashv
Containers intact:			11.					\dashv
Orthophosphate field filtered	-	<u> </u>	12,					\dashv
Organic Samples checked for dechlorination:	\dashv		13.					\dashv
Filiered volume received for Dissolved tests All containers have been checked for preservation.			<u> </u>		<u> </u>			
All containers needing preservation are found to be in compliance with EPA recommendation.	7		15,	PITL	.7			
exceptions: VOA, coliform, TOC, O&G, Phenolics			inilial when - completed Lot # of added preservative	71+ p	Dale/lime of reservalion			
Headspace in VOA Vials (>6mm):		-	16.					
Trip Blank Present:	\top	\top	- 17.					7
Trip Blank Custody Seals Present		١.	7					
Rad Aqueous Samples Screened > 0.5 mrem/hr	1-		Initial when	7A Da	le:	1)15-2		1
lient Notification/ Resolution:		-)						-
Person Contacled:		Date	e/Time:	•	Contacted B	lv:		
Comments/ Resolution:	•				,			
				<u> </u>				

Certification Office (i.e. out of hold, incorrect preservative, out of terrip, 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.

J:IQAQCIMasteriDocument Management/Sample Mgt/Sample Condition Upon Receipt Pittsburgh (C056-5 5July2017)

ATTACHMENT 1-10
August 2017 Sampling Event
Laboratory Analytical Report



August 23, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 02, 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.: 60249985

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.: 60249985

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60249985001	BAA-7-080117	Water	08/01/17 08:08	08/02/17 08:55
60249985002	DUP-080117	Water	08/01/17 06:00	08/02/17 08:55



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60249985001	BAA-7-080117	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60249985002	DUP-080117	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 23, 2017

General Information:

2 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: 488235

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249958001

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

- MS (Lab ID: 1999072)
 - Calcium

Additional Comments:

Analyte Comments:

QC Batch: 488235

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BAA-7-080117 (Lab ID: 60249985001)
 - Beryllium, Total Recoverable
 - Chromium, Total Recoverable
 - Lithium
- DUP-080117 (Lab ID: 60249985002)
 - Beryllium, Total Recoverable
 - Chromium, Total Recoverable
 - Lithium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 23, 2017

General Information:

2 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.: 60249985

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 23, 2017

General Information:

2 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: 490179

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249708001,60249708002

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

- MS (Lab ID: 2006567)
 - Mercury
- MS (Lab ID: 2006569)
 - Mercury
- MSD (Lab ID: 2006568)
 - Mercury

Additional Comments:



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Method: EPA 903.1

Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 23, 2017

General Information:

2 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.: 60249985

Method: EPA 904.0

Description:904.0 Radium 228Client:WESTAR ENERGYDate:August 23, 2017

General Information:

2 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.: 60249985

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:August 23, 2017

General Information:

2 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.: 60249985

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: August 23, 2017

General Information:

2 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.: 60249985

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 23, 2017

General Information:

2 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-7-080117 (Lab ID: 60249985001)
- DUP-080117 (Lab ID: 60249985002)

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.: 60249985

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 23, 2017

General Information:

2 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.: 60249985

Date: 08/23/2017 11:13 AM

Sample: BAA-7-080117	Lab ID: 602	249985001	Collected: 08/01/1	7 08:08	Received: 08	/02/17 08:55 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	0.041	mg/L	0.010	2	08/03/17 09:59	08/22/17 16:14	7440-39-3	
Beryllium, Total Recoverable	<0.0020	mg/L	0.0020	2	08/03/17 09:59	08/22/17 16:14	7440-41-7	D3
Boron, Total Recoverable	1.2	mg/L	0.10	1	08/03/17 09:59			
Calcium, Total Recoverable	241	mg/L	0.20	2	08/03/17 09:59	08/22/17 16:14	7440-70-2	
Chromium, Total Recoverable	<0.010	mg/L	0.010	2	08/03/17 09:59	08/22/17 16:14	7440-47-3	D3
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/03/17 09:59	08/13/17 15:59	7439-92-1	
Lithium	<0.020	mg/L	0.020	2	08/03/17 09:59	08/22/17 16:14	7439-93-2	D3
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	08/03/17 09:59	08/08/17 10:53	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:53	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/03/17 09:59	08/08/17 10:53	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:53	7440-48-4	
Molybdenum, Total Recoverable	0.071	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:53	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:53	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:53	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	08/16/17 19:00	08/17/17 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	oc oc					
Total Dissolved Solids	1730	mg/L	5.0	1		08/07/17 14:12		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500	0-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		08/03/17 11:40		H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	186	mg/L	20.0	20		08/07/17 00:58	16887-00-6	
Fluoride	0.79	mg/L	0.20	1		08/06/17 00:15	16984-48-8	
Sulfate	893	mg/L	100	100		08/07/17 01:11	14808-79-8	



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Date: 08/23/2017 11:13 AM

Sample: DUP-080117	Lab ID: 602	249985002	Collected: 08/01/1	7 06:00	Received: 08	/02/17 08:55 N	:55 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	0.037	mg/L	0.010	2	08/03/17 09:59	08/22/17 16:16	7440-39-3		
Beryllium, Total Recoverable	<0.0020	mg/L	0.0020	2	08/03/17 09:59	08/22/17 16:16	7440-41-7	D3	
Boron, Total Recoverable	1.2	mg/L	0.10	1		08/13/17 16:02			
Calcium, Total Recoverable	245	mg/L	0.20	2		08/22/17 16:16			
Chromium, Total Recoverable	<0.010	mg/L	0.010	2		08/22/17 16:16		D3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		08/13/17 16:02			
Lithium	<0.020	mg/L	0.020	2	08/03/17 09:59	08/22/17 16:16	7439-93-2	D3	
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	08/03/17 09:59	08/08/17 11:19	7440-36-0		
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/03/17 09:59	08/08/17 11:19	7440-38-2		
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/03/17 09:59	08/08/17 11:19	7440-43-9		
Cobalt, Total Recoverable	0.0014	mg/L	0.0010	1	08/03/17 09:59	08/08/17 11:19	7440-48-4		
Molybdenum, Total Recoverable	0.072	mg/L	0.0010	1	08/03/17 09:59	08/08/17 11:19	7439-98-7		
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1		08/08/17 11:19			
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/03/17 09:59	08/08/17 11:19	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	08/16/17 19:00	08/17/17 09:51	7439-97-6		
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC .						
Total Dissolved Solids	1820	mg/L	5.0	1		08/07/17 14:13			
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	0-H+B						
pH at 25 Degrees C	7.3	Std. Units	0.10	1		08/03/17 11:36		H6	
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0						
Chloride	185	mg/L	20.0	20		08/07/17 01:24	16887-00-6		
Fluoride	0.74	mg/L	0.20	1		08/06/17 00:59	16984-48-8		
Sulfate	909	mg/L	100	100		08/07/17 01:37	14808-79-8		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Date: 08/23/2017 11:13 AM

QC Batch: 490179 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 2006565 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 08/17/17 09:18

LABORATORY CONTROL SAMPLE: 2006566

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0052 104 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2006567 2006568

MS MSD 60249708001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0027 70-130 20 M1 Mercury mg/L < 0.000024 .005 .005 0.0027 54 54

MATRIX SPIKE SAMPLE: 2006569

60249708002 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers < 0.000024 70-130 M1 Mercury mg/L .005 0.0025 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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Date: 08/23/2017 11:13 AM

QC Batch: 488235 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 1999070 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/13/17 15:44	
Beryllium	mg/L	< 0.0010	0.0010	08/13/17 15:44	
Boron	mg/L	<0.10	0.10	08/13/17 15:44	
Calcium	mg/L	<0.10	0.10	08/13/17 15:44	
Chromium	mg/L	< 0.0050	0.0050	08/13/17 15:44	
Lead	mg/L	< 0.0050	0.0050	08/13/17 15:44	
Lithium	mg/L	< 0.010	0.010	08/13/17 15:44	

LABORATORY CONTROL SAMPLE:	1999071	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		0.97	97	85-115	
Beryllium	mg/L	1	1.1	107	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.8	98	85-115	
Chromium	mg/L	1	1.0	100	85-115	
_ead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.0	101	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	TE: 19990	72		1999073							
			MS	MSD								
	6	0249958001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.066	1	1	1.1	1.1	103	101	70-130	1	20	
Beryllium	mg/L	< 0.0020	1	1	1.1	1.0	105	104	70-130	1	20	
Boron	mg/L	3.0	1	1	3.8	3.8	82	82	70-130	0	20	
Calcium	mg/L	141	10	10	154	151	133	103	70-130	2	20	M1
Chromium	mg/L	< 0.0050	1	1	1.1	1.0	110	101	70-130	8	20	
Lead	mg/L	< 0.0050	1	1	0.96	0.94	96	94	70-130	1	20	
Lithium	mg/L	< 0.020	1	1	1.1	1.0	105	103	70-130	1	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.: 60249985

Date: 08/23/2017 11:13 AM

QC Batch: 488237 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 1999079 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/08/17 10:40	
Arsenic	mg/L	< 0.0010	0.0010	08/08/17 10:40	
Cadmium	mg/L	< 0.00050	0.00050	08/08/17 10:40	
Cobalt	mg/L	< 0.0010	0.0010	08/08/17 10:40	
Molybdenum	mg/L	< 0.0010	0.0010	08/08/17 10:40	
Selenium	mg/L	< 0.0010	0.0010	08/08/17 10:40	
Thallium	mg/L	< 0.0010	0.0010	08/08/17 10:40	

LABORATORY CONTROL SAMPLE:	1999080					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.040	99	85-115	
Cadmium	mg/L	.04	0.040	99	85-115	
Cobalt	mg/L	.04	0.040	100	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 199908	31		1999082							
Parameter	6 Units	0249985001 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	0.038	96	96	70-130		20	
Arsenic	mg/L	< 0.0010	.04	.04	0.041	0.041	100	100	70-130	0	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.036	0.036	90	89	70-130	0	20	
Cobalt	mg/L	0.0013	.04	.04	0.039	0.039	95	94	70-130	1	20	
Molybdenum	mg/L	0.071	.04	.04	0.11	0.11	110	110	70-130	0	20	
Selenium	mg/L	< 0.0010	.04	.04	0.036	0.037	90	91	70-130	1	20	
Thallium	mg/L	< 0.0010	.04	.04	0.043	0.043	106	106	70-130	0	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.: 60249985

QC Batch: 488701 Analysis Method: SM 2540C

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

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 2000988 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/07/17 14:08

LABORATORY CONTROL SAMPLE: 2000989

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 1030 103 80-120

SAMPLE DUPLICATE: 2000990

60250086001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 469 2 10 **Total Dissolved Solids** 480 mg/L

SAMPLE DUPLICATE: 2000991

Date: 08/23/2017 11:13 AM

ParameterUnits60250164001 ResultDup ResultRPDMax RPDQualifiersTotal Dissolved Solidsmg/L831825110

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.: 60249985

QC Batch: 488220 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60249985001, 60249985002

SAMPLE DUPLICATE: 1999035

Date: 08/23/2017 11:13 AM

 Parameter
 Units
 Result Result Result
 RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.4
 7.5
 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.: 60249985

Date: 08/23/2017 11:13 AM

QC Batch: 488540 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 2000546 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 08/05/17 17:38

LABORATORY CONTROL SAMPLE: 2000547

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

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.:

60249985

QC Batch:

488592

Analysis Method:

Matrix: Water

EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples:

60249985001, 60249985002

METHOD BLANK: Associated Lab Samples:

2000742

60249985001, 60249985002

Blank

Reporting

Parameter

Units

Result <1.0 Limit 1.0

Analyzed

Qualifiers

Chloride Sulfate

mg/L mg/L

<1.0

08/06/17 20:14 1.0 08/06/17 20:14

LABORATORY CONTROL SAMPLE:

Parameter

2000743

Spike Conc.

MS

LCS LCS Result % Rec 4.8

% Rec Limits

Qualifiers

Chloride Sulfate

mg/L mg/L

mg/L

Units

5 5

4.8

97 97 90-110 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

2000744

619

2000745

% Rec

Max Limits **RPD** RPD

Qual

60249708001 Spike Spike MS MSD MS MSD Parameter Units Result Conc. Conc. Result Result % Rec % Rec mg/L 14300 5000 5000 20000 19800 115 111

Chloride Sulfate

500 500

MSD

1070 1080 90

80-120 80-120

93

15 15

Date: 08/23/2017 11:13 AM

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.: 60249985

Sample: BAA-7-080117 PWS:	Lab ID: 60249985 Site ID:	Collected: 08/01/17 08:08 Sample Type:	Received:	08/02/17 08:55	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.674 ± 0.493 (0.551) C:NA T:82%	pCi/L	08/15/17 11:17	7 13982-63-3	
Radium-228	EPA 904.0	0.481 ± 0.391 (0.786) C:76% T:90%	pCi/L	08/15/17 11:5	5 15262-20-1	
Total Radium	Total Radium Calculation	1.16 ± 0.884 (1.34)	pCi/L	08/23/17 11:09	7440-14-4	



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

Sample: DUP-080117 Lab ID: 60249985002 Collected: 08/01/17 06:00 Received: 08/02/17 08:55 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 1.54 ± 1.06 (1.13) Radium-226 pCi/L 08/15/17 11:34 13982-63-3 C:NA T:82% EPA 904.0 0.927 ± 0.515 (0.946) Radium-228 pCi/L 08/15/17 11:41 15262-20-1 C:79% T:85% Total Radium **Total Radium** 2.47 ± 1.58 (2.08) pCi/L 08/23/17 11:20 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60249985

QC Batch: 267554 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 1317175 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

 Parameter
 Act \pm Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.831 \pm 0.415 (0.725) C:76% T:86%
 pCi/L
 08/15/17 11:55

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.: 60249985

QC Batch: 267553 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60249985001, 60249985002

METHOD BLANK: 1317174 Matrix: Water

Associated Lab Samples: 60249985001, 60249985002

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

 Radium-226
 0.0658 ± 0.300 (0.611) C:NA T:100%
 pCi/L
 08/15/17 11:17

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.: 60249985

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: 08/23/2017 11:13 AM

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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.: 60249985

Date: 08/23/2017 11:13 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60249985001 60249985002	BAA-7-080117 DUP-080117	EPA 200.7 EPA 200.7	488235 488235	EPA 200.7 EPA 200.7	488322 488322
60249985001 60249985002	BAA-7-080117 DUP-080117	EPA 200.8 EPA 200.8	488237 488237	EPA 200.8 EPA 200.8	488321 488321
60249985001 60249985002	BAA-7-080117 DUP-080117	EPA 245.1 EPA 245.1	490179 490179	EPA 245.1 EPA 245.1	490214 490214
60249985001 60249985002	BAA-7-080117 DUP-080117	EPA 903.1 EPA 903.1	267553 267553		
60249985001 60249985002	BAA-7-080117 DUP-080117	EPA 904.0 EPA 904.0	267554 267554		
60249985001	BAA-7-080117	Total Radium Calculation	269241		
60249985002	DUP-080117	Total Radium Calculation	269244		
60249985001 60249985002	BAA-7-080117 DUP-080117	SM 2540C SM 2540C	488701 488701		
60249985001 60249985002	BAA-7-080117 DUP-080117	SM 4500-H+B SM 4500-H+B	488220 488220		
60249985001	BAA-7-080117	EPA 300.0	488540		
60249985001	BAA-7-080117	EPA 300.0	488592		
60249985002	DUP-080117	EPA 300.0	488540		
60249985002	DUP-080117	EPA 300.0	488592		



Sample Condition Upon Receipt



Client Name: Wester Energy		
Courier: FedEx □ UPS □ VIA 🕱 Clay □ □	PEX 🗆 ECI 🗆	Pace □ Xroads □ Client □ Other □
Tracking #: Pac	ce Shipping Label Used	d? Yes□ No Xi
Custody Seal on Cooler/Box Present: Yes ⋈ No □	Seals intact: Yes	ĺ No□
Packing Material: Bubble Wrap ☐ Bubble Bags [~	None X Other □
Thermometer Used: 7-266 / T-239 Type of	fice: (Vet) Blue No	Date and initials of powers -
Cooler Temperature (°C): As-read <u>5.0</u> Corr. Fact	tor CF(0.0 CF +0.3 Correct	ted 5 () examining contents: 6/2/17 (1)
Temperature should be above freezing to 6°C		
Chain of Custody present:	Yes □No □N/A	
Chain of Custody relinquished:	⊠Yes □No □N/A	
Samples arrived within holding time:	XYes □No □N/A	*
Short Hold Time analyses (<72hr):	X Yes □No □N/A	HN63
Rush Turn Around Time requested:	□Yes □No □XI/A	
Sufficient volume:	ŻYes □No □N/A	
Correct containers used:	X Yes □No □N/A	One Mos container reid
Pace containers used:	∭Yes □No □N/A	for Dup-080117 w/ 1.d
Containers intact:	Øves □No □N/A	having been opaned but not
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No □ X I/A	Filled w/ Sample wine
Filtered volume received for dissolved tests?	□Yes □No DXN/A	2 / /
Sample labels match COC: Date / time / ID / analyses	¥Yes □No □N/A	
Samples contain multiple phases? Matrix: WT	□Yes 🕅 No □N/A	
Containers requiring pH preservation in compliance?	XYes □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 DXNo	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes 🕱 No	
Trip Blank present:	□Yes □No □XN/A	
Headspace in VOA vials (>6mm):	□Yes □No □V4/A	
Samples from USDA Regulated Area: State:	□Yes □No ▼N/A	
Additional labels attached to 5035A / TX1005 vials in the field	? □Yes □No XN/A	
Client Notification/ Resolution: Copy COC t	o Client? Y / N	Field Data Required? Y / N
Person Contacted: Date/	Time:	
Comments/ Resolution:		
Project Manager Parison AMILL	B .	dala
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.

ection A lequired Client information:	Section B Required Proje	_							ce Info	ormatic								_					P	Page:	1	of		
ompany: WESTAR ENERGY	Report To: Bra							Atten				Morri			~~		_	_			_	_		- 1,-				
ddress 818 Kansas Ave	Copy To: Jai	ed Mo	rrison, He	eath Hor	nya					Varne:			R EN		jΥ			-		-	_	AGEN						
Topeka, KS 66612								Addre			SE	ESE	CTIO	N A				-		PDES			'UND	WATE		DRINKI	NG WA	TER
mail To: brandon_l.griffin@westarenergy.com	Purchase Orde							Refere										UST RCRA OTHER					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
hone: (785) 575-8135 Fax:	Project Name:	JEC	CCR Gro	oundwate	ЭГ			Manag					lson,	913	-563-	1407		_ `	Site I	.ocati	on	ŀ	(S					
tequested Due Date/TAT: 7 DAY	Project Number	:						Pace	Profile	#: 9	657,	1							-	STAT	_			_				
		, ,					_		_					4		Requ	ieste	d An	alys	is Fil	tere	(Y/N)	_	₩				
Section D Valid Matrix C Required Client Information MATRIX DRINKING WATER	CODE G	C=COMP)		COLL	ECTED		z			Pi	reser	vative	es	4	N />	-		_		H	+	++	+					
WATER WASTE WATER PRODUCT SOIL/SOLID OIL	MA ST See valid code	(G=GRAB C=	COMPO STAF		COMPO END/G	OSITE RAB	COLLECTION								* o'c	** S	Sury	*						(V/N)				
SAMPLE ID WIPE AIR OTHER Sample IDS MUST BE UNIQUE TISSUE	AR DT CO	YPE ((SAMPLE TEMP AT CO	CONTAINERS	Unpreserved) ₄	Ę,	NaOH	Methanol		#Analysis Test#	8 Total Metals**	245.1 Total Mercury	300.0 Cl, Fl, SO4	2540C TDS	Radium 226	Radium 228			Residual Chlorine (Y/N)	6	524	199	15
TEM	MATRIX	SAMPLE.	DATE	TIME	DATE	TIME	SAME	# OF	J di	H ₂ SO ₄	일	NaOH	Meth	Other	₹ 8	200.8	245.	300.	254(Rad	Rad			Res	Pace	Project	No./	Lab I.D.
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2															IL									Ш				
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4 OUP-080117	W	16			8/01	0600		14			3			_	8	1		_	-		4	+	4	Н	3BP1	Ni	341	ly as
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ADDITIONAL COMMENTS	RI	LINQU	ISHED BY	AFFILIAT	ION	DAT	E		TIME		,	- 1	CCEP	TED	BY/A	AFFILI	NOITA			DATE		TIME			SAMP	LE CONE	OITIONS	I
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li **200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Ti	13	VY	/v	Vest	-1	8/1/	17	13	300		fee	ua	3	w	d	Pa	u		8	12/13	- (1855	5.	٥,	4	4		4
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Page 30 of 3						me of SAM RE of SAM			3/6	10	ch/	6	1.7	万		DATE	Signe	ed		61/	/	,		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)

WO#:30226178

Chain of Custody



Pace Analytical **

Workorder: 60249985 Wo	rkorder	Name:JEC CC												1		
Report To	A COLUCT	Subcontra	ct To	1000000	State of the State	en e	Owne	r Red	eive	d Date:			Results	Reques	sted By:	8/24/2017
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1407	and the second s	Pace 1638 Suites Greer	Analytical Pitts Roseytown Ros s 2,3, & 4 nsburg, PA 156 e (724)850-560	ad . 801			ed Containers			226 & Total Radium			nalysis			
Item Sample ID 1 BAA-7-080117	Sample Type PS	Date/Time	Lab ID	Matrix	HNO3	eserve	d Cont	ainers	Radium	Radium-		NATION AND DESCRIPTION OF THE PROPERTY OF THE			A COLUMN A SAN AND AND AND AND AND AND AND AND AND A	LAB USE ONLY
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**In order to maintain client confi	dontinlite.	(a = = 41									<u></u>		Valli	hise ill	ati 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 F	Receipt Pittsburgh
p "! Face Analytical	7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7
Client Name	Froject #
Courter: Fed Ex UPS USPS	Olient Dommercial Dace Other Label CAT
Tracking #:7285(659	51421 LIMS Login
Custody Seal on Cooler/Box Present:	lyes no Seals Infact: yes no
Thermometer Used	Type of Ice: Wet Blue None
Cooler Temperature Observed Temp _ Temp should be above freezing to 6°C	°C Correction Factor: °C Final Temp: °C
Comments:	Yes No N/A Date and Initials of person examining contents:
Chain of Custody Present:	1.
Chain of Custody Filled Oul:	2.
Chain of Custody Relinquished:	
Sampler Name & Signature on COC:	3.
Sample Labels malch COC:	5.
-includes date/lime/ID Matrix:	T T
Samples Arrived within Hold Time:	6.
Short Hold Time Analysis (<72hr remaining):	7.
Rush Turn Around Time Requested:	8.
	9. Sample OOD is Low Volume
Sufficient Volume: ZH Correct Containers Used: 8/3/17	9. 50 WIFTE DOW 15 COW DOTTUME
-Pace Containers Used:	10,
Containers Intact:	11.
Orlhophosphate field filtered	12.
Organic Samples checked for dechlorination:	- 13.
Fillered volume received for Dissolved tests	/ 14.
All containers have been checked for preservation.	
All containers needing preservation are found to be in compliance with EPA recommendation.	15. ()4.2
exceptions: VOA, collform, TOC, O&G, Phenolics	initial when 7 Date/time of
, which is a seminarily root odd, thenough	completed 21+ Date/time of Date/
	preservative
Headspace in VOA Vials (>6mm):	
Trip Blank Present:	
Trip Blank Cuslody Seals Present Rad Aqueous Samples Screenèd > 0.6 mrem/hr	
	Initial when completed; 2H Date: 873/(7
Client Notification/ Resolution:	
Person Contacled: Watto Culty	Date/Time: 8/3/17 Contacted By: CAS
Comments/ Resolution:	re Z has only (1) 2-lifer.
no additional values of	
no additional volume, o	confine using law volume
A check in this box indicates that addition	nal information has been stored in ereports.
ote: Whenever there is a discrepancy affecting Modb Carolin	To compliance according
	na compliance samples, a copy of this form will be sent to the North Carolina DEHNR t of temp, Incorrect containers)
M review is documented electronically in LIMS. When the Pr he Workorder Edit Screen.	roject Manager closes the SRF Review schedule in LIMS. The review is in the Status section

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-5 5July2017)





August 31, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 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



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



CERTIFICATIONS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

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

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

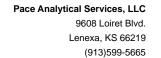
Louisiana Certification #: 03055

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.: 60250361

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60250361001	BAA-7-080717	Water	08/07/17 11:33	08/08/17 07:20



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60250361001	BAA-7-080717	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	JMC1	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 31, 2017

General Information:

1 sample was 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: 490028

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60250784001

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

- MS (Lab ID: 2005870)
 - Calcium
- MSD (Lab ID: 2005871)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 31, 2017

General Information:

1 sample was 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.: 60250361

Method:EPA 245.1Description:245.1 MercuryClient:WESTAR ENERGYDate:August 31, 2017

General Information:

1 sample was 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.: 60250361

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** August 31, 2017

General Information:

1 sample was 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.: 60250361

Method: EPA 904.0

Description: 904.0 Radium 228 **Client:** WESTAR ENERGY **Date:** August 31, 2017

General Information:

1 sample was 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.: 60250361

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:August 31, 2017

General Information:

1 sample was 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.: 60250361

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: August 31, 2017

General Information:

1 sample was 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.: 60250361

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 31, 2017

General Information:

1 sample was 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-7-080717 (Lab ID: 60250361001)

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.: 60250361

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 31, 2017

General Information:

1 sample was 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.: 60250361

Date: 08/31/2017 09:57 AM

Sample: BAA-7-080717	Lab ID: 602	250361001	Collected: 08/07/1	7 11:33	Received: 08	3/08/17 07:20 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	0.039	mg/L	0.0050	1	08/16/17 09:53	08/17/17 17:27	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/16/17 09:53	08/17/17 17:27	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1	08/16/17 09:53			
Calcium, Total Recoverable	223	mg/L	0.10	1	08/16/17 09:53	08/17/17 17:27	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/16/17 09:53	08/17/17 17:27	7440-47-3	
_ead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/16/17 09:53			
ithium	0.014	mg/L	0.010	1	08/16/17 09:53	08/17/17 17:27	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	08/09/17 17:03	08/10/17 16:17	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:17	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/09/17 17:03	08/10/17 16:17	7440-43-9	
Cobalt, Total Recoverable	0.0025	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:17	7440-48-4	
Molybdenum, Total Recoverable	0.076	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:17	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:17	7782-49-2	
Гhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:17	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	08/29/17 11:40	08/29/17 16:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1960	mg/L	5.0	1		08/11/17 09:34		
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		08/09/17 09:59)	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	187	mg/L	25.0	25		08/30/17 16:02	16887-00-6	
Fluoride	0.86	mg/L	0.20	1		08/30/17 00:02	16984-48-8	
Sulfate	923	mg/L	200	200		08/30/17 16:18	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

MATRIX SPIKE SAMPLE:

Date: 08/31/2017 09:57 AM

QC Batch: 491873 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60250361001

METHOD BLANK: 2013080 Matrix: Water

Associated Lab Samples: 60250361001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 08/29/17 16:08

LABORATORY CONTROL SAMPLE: 2013081

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0051 102 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2013082 2013083

2013084

MS MSD 60251349001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 0.0051 0.0052 70-130 2 20 Mercury mg/L .005 .005 102 103

60251349002 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers 0.0052 ND 104 70-130 Mercury mg/L .005

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.: 60250361

Date: 08/31/2017 09:57 AM

QC Batch: 490028 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60250361001

METHOD BLANK: 2005868 Matrix: Water

Associated Lab Samples: 60250361001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/17/17 17:13	
Beryllium	mg/L	< 0.0010	0.0010	08/17/17 17:13	
Boron	mg/L	<0.10	0.10	08/17/17 17:13	
Calcium	mg/L	<0.10	0.10	08/17/17 17:13	
Chromium	mg/L	< 0.0050	0.0050	08/17/17 17:13	
Lead	mg/L	< 0.0050	0.0050	08/17/17 17:13	
Lithium	mg/L	<0.010	0.010	08/17/17 17:13	

LABORATORY CONTROL SAMPLE:	2005869					
		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	102	85-115	
Boron	mg/L	1	1.0	101	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	1.0	105	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 20058	70		2005871							
			MS	MSD								
	6	0250784001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.12	1	1	1.1	1.1	100	103	70-130	2	20	
Beryllium	mg/L	< 0.00016	1	1	0.99	1.0	99	101	70-130	2	20	
Boron	mg/L	1.9	1	1	2.9	2.9	98	95	70-130	1	20	
Calcium	mg/L	532	10	10	524	516	-81	-160	70-130	2	20	M1
Chromium	mg/L	< 0.0014	1	1	1.0	1.0	101	103	70-130	2	20	
Lead	mg/L	0.0050J	1	1	0.90	0.90	89	90	70-130	0	20	
Lithium	mg/L	0.43	1	1	1.6	1.6	112	113	70-130	1	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.: 60250361

Date: 08/31/2017 09:57 AM

QC Batch: 489217 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60250361001

METHOD BLANK: 2002653 Matrix: Water

Associated Lab Samples: 60250361001

Davamatan	Unite	Blank	Reporting	A a l a d	Overlifiere
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	< 0.0010	0.0010	08/10/17 14:24	
Arsenic	mg/L	< 0.0010	0.0010	08/10/17 14:24	
Cadmium	mg/L	< 0.00050	0.00050	08/10/17 14:24	
Cobalt	mg/L	< 0.0010	0.0010	08/10/17 14:24	
Molybdenum	mg/L	< 0.0010	0.0010	08/10/17 14:24	
Selenium	mg/L	< 0.0010	0.0010	08/10/17 14:24	
Thallium	mg/L	< 0.0010	0.0010	08/10/17 14:24	

LABORATORY CONTROL SAMPLE:	2002654					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.040	101	85-115	
Cadmium	mg/L	.04	0.039	99	85-115	
Cobalt	mg/L	.04	0.041	101	85-115	
Molybdenum	mg/L	.04	0.041	104	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.041	102	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 20026	55		2002656							
			MS	MSD								
	6	0250510001	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	0.040	98	99	70-130	2	20	
Arsenic	mg/L	11.4 ug/L	.04	.04	0.052	0.053	102	104	70-130	2	20	
Cadmium	mg/L	ND	.04	.04	0.039	0.039	98	98	70-130	0	20	
Cobalt	mg/L	ND	.04	.04	0.043	0.043	100	100	70-130	0	20	
Molybdenum	mg/L	ND	.04	.04	0.042	0.042	104	104	70-130	0	20	
Selenium	mg/L	ND	.04	.04	0.040	0.040	98	98	70-130	1	20	
Thallium	mg/L	ND	.04	.04	0.039	0.040	96	98	70-130	2	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.: 60250361

QC Batch: 489402 Analysis Method: SM 2540C

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

Associated Lab Samples: 60250361001

METHOD BLANK: 2003281 Matrix: Water

Associated Lab Samples: 60250361001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/11/17 09:31

LABORATORY CONTROL SAMPLE: 2003282

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 1030 103 80-120

SAMPLE DUPLICATE: 2003283

60250361001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1960 4 10 **Total Dissolved Solids** 2040 mg/L

SAMPLE DUPLICATE: 2003284

Date: 08/31/2017 09:57 AM

ParameterUnits60250614001 ResultDup ResultMax RPDMax RPDTotal Dissolved Solidsmg/L459454110

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.: 60250361

QC Batch: 489010 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60250361001

SAMPLE DUPLICATE: 2001784

Date: 08/31/2017 09:57 AM

60250317001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 6.5 pH at 25 Degrees C Std. Units 5 H6 6.5 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.: 60250361

QC Batch: 491643 QC Batch Method:

EPA 300.0

Analysis Method:

EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples: 60250361001

Parameter

METHOD BLANK: 2012453

Matrix: Water

Associated Lab Samples:

Date: 08/31/2017 09:57 AM

Chloride

Fluoride

Sulfate

60250361001

Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
mg/L	<1.0	1.0	08/29/17 22:16	
mg/L	< 0.20	0.20	08/29/17 22:16	
mg/L	<1.0	1.0	08/29/17 22:16	

LABORATORY CONTROL SAMPLE: 2012454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L		4.8	96	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 20124	55		2012456							
			MS	MSD								
	6	0250360001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	66.0	25	25	95.2	95.1	117	116	80-120	0	15	
Fluoride	mg/L	0.81	2.5	2.5	3.3	3.4	100	103	80-120	2	15	
Sulfate	ma/L	1380	1250	1250	2610	2610	99	99	80-120	0	15	

MATRIX SPIKE SAMPLE:	2012457	2059121002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Fluoride	mg/L	ND	2.5	2.8	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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

Sample: BAA-7-080717 PWS:	Lab ID: 602503 Site ID:	61001 Collected: 08/07/17 Sample Type:	11:33 Received:	08/08/17 07:20	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Tra	ac Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.349 ± 0.456 (0.752) C:NA T:98%	pCi/L	08/19/17 13:08	13982-63-3	
Radium-228	EPA 904.0	0.737 ± 0.504 (0.986) C:81% T:87%	pCi/L	08/21/17 13:27	15262-20-1	
Total Radium	Total Radium Calculation	1.09 ± 0.960 (1.74)	pCi/L	08/23/17 15:26	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

QC Batch: 267988 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60250361001

METHOD BLANK: 1318833 Matrix: Water

Associated Lab Samples: 60250361001

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

 Radium-228
 0.617 ± 0.409 (0.788) C:79% T:80%
 pCi/L
 08/21/17 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.



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60250361

QC Batch: 267982 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60250361001

METHOD BLANK: 1318829 Matrix: Water

Associated Lab Samples: 60250361001

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

 Radium-226
 0.0630 ± 0.371 (0.757) C:NA T:107%
 pCi/L
 08/19/17 12:14

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.: 60250361

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: 08/31/2017 09:57 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.: 60250361

Date: 08/31/2017 09:57 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60250361001	BAA-7-080717	EPA 200.7	490028	EPA 200.7	490117
60250361001	BAA-7-080717	EPA 200.8	489217	EPA 200.8	489263
60250361001	BAA-7-080717	EPA 245.1	491873	EPA 245.1	492022
60250361001	BAA-7-080717	EPA 903.1	267982		
60250361001	BAA-7-080717	EPA 904.0	267988		
60250361001	BAA-7-080717	Total Radium Calculation	269344		
60250361001	BAA-7-080717	SM 2540C	489402		
60250361001	BAA-7-080717	SM 4500-H+B	489010		
60250361001	BAA-7-080717	EPA 300.0	491643		



Sample Condition Upon Receipt



Client Name: Westar Energy	
Courier: FedEx □ UPS □ VIA □ Clay □ PEX □ ECI □	Pace ☐ Xroads ☐ Client ☐ Other ☐
Tracking #: Pace 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 ☐ Foam ☐	Nope □ Other □
Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue No.	
Cooler Temperature (°C): As-read Corr. Factor EFD CF +0.3 Correct	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	PV8/8/17
Chain of Custody present: ✓ Yes □No □N/A	
Chain of Custody relinquished: ✓ Yes □No □N/A	
Samples arrived within holding time:	
Short Hold Time analyses (<72hr):	PH
Rush Turn Around Time requested:	,
Sufficient volume:	excessive volume; entire IL received
Correct containers used:	for in house wetals analyses.
Pace containers used:	- not excessive volume
Containers intact:	24mw 8/8/17
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	
Filtered volume received for dissolved tests?	1
Sample labels match COC: Date / time / ID / analyses	
Samples contain multiple phases? Matrix:	
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: N/A	
Lead acetate strip turns dark? (Record only) □Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve)	
Trip Blank present:	
Headspace in VOA vials (>6mm):	
Samples from USDA Regulated Area: State:	
Additional labels attached to 5035A / TX1005 vials in the field?	
Client Notification/ Resolution: Copy COC to Client? Y N	Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	

	alala
Project Manager Review: Dat	e: 6/8/1/1



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 Inform	nation:	Section B Required Pro	oject Int	formation:					Sectio nvoice	on C Inform	nation:							Page: of											
	TAR ENERGY	Report To: E	Brando	on Griffin	1			1	ttenti	on:	Jare	d Mo	rriso	n															
ddress: 818 K	Kansas Ave	Capy To: J	lared	Morrison	, Heath Hor	nya			ompa	any Nai	me: \	VES	TAR	ENEF	RGY				REG	3UL/	ATOR	Y A	GENC'	Y.					
Tope	ka, KS 66612							1	ddres	ss:	S	EE S	SECT	ION	1				V	NPE	DES		GROU	ND W	VATER	٦ ٦	RINKING	WATER	7
mail To: branc	don.l.griffin@westarenergy.com	Purchase On	der No.						ace Q Referer										Г	UST		Г	RCRA			ГС	THER		
Phone: (785) 575-		Project Name	e: J[EC CCR	Groundwat	er		F	ace P	roject	Hea	ther \	Wilso	n, 91	3-563	3-140)7		Sit	e Lo	cation	ation					7		
Requested Due Date	/TAT: 7 DAY	Project Numb	ber.							rofile #:	965	7, 1							E	STATE: KS									
			_													Re	ques	sted	Anal	ysis	Filte	red (Y/N)						7
Section D	Valid Matrix C	odes	() (i)	<u>a</u>	0011	CCTED		П			Pros	ervat	tivos		N/A							П		П					
Sa	AMPLE ID (A-Z, 0-9 / ,-) IDS MUST BE UNIQUE MATRIX DRINKING WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR OTHER TISSUE	AR OT TS	CODE (see valid	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE	COMPO- END/GF	SITE RAB	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	03			Methanol	is Test	200.7 Total Metals*	200.8 Total Metals**	의 의 의	4500 H+B	2540C TDS	Radium 226 Radium 228				Residual Chlorine (Y/N)		2509 Project N	o./ Lab I.D.	24
	-7-080717		UT I		TE THE	8/7	1133	Н	4	1	3	1	П		П									П				1N200	\overline{A}
1 044	-1 0001.1								•						1														
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	ADDITIONAL COMMENTS		RELIN	IQUISHED	BY / AFFILIA		DATE			TIME		1		CEPTE					_		ATE		TIME	+	. [SAMPI	ECONDIT	IONS	4
*200.7 Total Metals:	Ba, Be, B, Ca, Cr, Pb, Li	13	12	V/	NG	95	8/7/	17	16	0		4	4	n	y	29	52			2/2	3/17	0	720	0.	- [Y	γ	Y	_
**200 8 Total Metals:	: Co, As, Se, Mo, Cd, Sb, Tl			,							_	V										+		-	-				
_		_									+												_	-	+				7
Page					CAMPI	ER NAME	AND SIGN	ATUR	F															1	,	5	p ç	act	
e 27 of 29					SAMP	PRINT Na	ne of SAMF	PLER:	_	im d	en pr	6,	F	Th		DA (M	TE SI	gned /YY):	68	10	7/1	7			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)	

Chain of Custody



*****	rkorder: 60250361	Workorder Name: JEC CCR GROUNDWATER Subcontract To														d Date:		8/8/2017 Results Requested By: 8/30/2017 Requested Analysis				
Pace 9608 Lene	ther Wilson e Analytical Kansas 3 Loiret Blvd. exa, KS 66219 ne 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600						ontainers	Radium-228	Radium-226 & Total Radium			26672									
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HN03				Radiu				LAB USE ONLY								
1	BAA-7-080717	PS	8/7/2017 11:33	60250361001	Water	2			×	X				00								
3				Companies Compan				+														
<u>4</u>																						
												Cor	nments									
Tran	sfers Released By	2	Date/Time	Received I	Зу			Date/	Time													
1	Kenter		6/8/12	/ <u>*</u>	5)	819	117	0955												
2		\sim	11/	()	V			' '														
3		· •				2								<u> </u>								
Coc	ler Temperature on I	Receipt NA	°C ∫ Cu	stody Seal	Y or N	<u>()</u>	Re	eceived	on Ic	e Y	or (N)	Sar	nples Intact	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 Condi	tion Upon Rece	eipt I-	rittsb	ourg	h			7 n o	26	c 7
Face Analytical		_							. has VI V	J /
(Client Name:)Ac	E_	KS		Project	#		
Courier Fed Ex U			Comme	ercial	Pace Olhe	r _		1	abel (
Tracking #: 728					_	_		LIMS L	ogin	YL
Custody Seal on Cooler/B	ox Present: Uyes NA				ls inlact:	`	no			
Cooler Temperature O	bserved Temp		.c	Cor	rection Factor:_		°C Fin	al Temp:	Vincen	c
Temp should be above freezing							7	ed lettele e	C	mining
			,	1	_		conte	nts: 21	f person exam + 8/9 (<u></u>
Comments:		Yes	No	N/A			Lauve			
Chain of Custody Present:		 	<u> </u>		1.					
Chain of Custody Filled Out:		-			2.				~~~~	
Chain of Custody Relinquish	ed:	/			3.					
Sampler Name & Signature	on COC:	-			4.					
Sample Labels match COC:					5.					
-Includes date/lime/iD	Matrix:	WT	-							
Samples Arrived within Hold	Time:				6.					<u></u>
Short Hold Tlme Analysis (<72hr remaining):				7.					
Rush Turn Around Time Re	quested:				8.					
Sufficient Volume:					9.					
Correct Containers Used:	•		ĺ		10.					
-Pace Containers Used:		-								
Containers Intact:		/			11.					
Orthophosphate field filtered	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			je.	12.					
Organic Samples checked	for dechlorination:			~	13.					
illered volume received for D				/	14.					
il containers have been checked	l for preservation.	_			15.	1+ 6				
ll containers needing preservation					{/	1+ L				
xceptions: VOA, coliform, T	OC O&G Phenolics				Initial when Z	7+	Date/time of preservation			
Adaptional VO74 bolloning i	oo, oao, monenso				Lot # of added		<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>			
					preservative					
eadspace in VOA Vials (>6r	nm):				16.					
rlp Blank Present:					17.					
rip Blank Custody Seals Pres					Initial when		· · · · · · · · · · · · · · · · · · ·			
ad Aqueous Samples Scre	ened > 0.5 mrem/nr				completed: 7	+	Date: 5	3191	17	
llent Notification/ Resolution Person Contacled:				ale/T	ime:		Conta	cled By:		
Comments/ Resolution:			-							
A check in this box i	ndicates that additi	onal in	iform:	afion	has been store	ed in e	reports.			
	vara sime danie.		,,,,,				j 			

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 11, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 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,

Danie M. 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.: 60251121

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.: 60251121

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251121001	BAA-7-081617	Water	08/16/17 11:47	08/17/17 07:50



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251121001	BAA-7-081617	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	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	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:

1 sample was 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.: 60251121

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:

1 sample was 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.: 60251121

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:

1 sample was 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.: 60251121

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** September 11, 2017

General Information:

1 sample was 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.: 60251121

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:

1 sample was 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.: 60251121

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:September 11, 2017

General Information:

1 sample was 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.: 60251121

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: September 11, 2017

General Information:

1 sample was 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.: 60251121

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:

1 sample was 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-7-081617 (Lab ID: 60251121001)

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.: 60251121

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:

1 sample was 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: 493302

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60251775001

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

- MS (Lab ID: 2018407)
 - Sulfate

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.: 60251121

Date: 09/11/2017 12:18 PM

Sample: BAA-7-081617	Lab ID: 602	251121001	Collected: 08/16/1	7 11:47	Received: 08	/17/17 07:50 ľ	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	0.034	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:25	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/25/17 12:14	08/28/17 17:25	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1	08/25/17 12:14	08/28/17 17:25	7440-42-8	
Calcium, Total Recoverable	234	mg/L	0.10	1	08/25/17 12:14	08/28/17 17:25	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/25/17 12:14			
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/25/17 12:14			
ithium	0.015	mg/L	0.010	1	08/25/17 12:14	08/28/17 17:25	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	08/23/17 15:28	08/28/17 17:12	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:12	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/23/17 15:28	08/28/17 17:12	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:12	7440-48-4	
Molybdenum, Total Recoverable	0.071	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:12	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:12	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:12	7440-28-0	
45.1 Mercury	Analytical Met	hod: EPA 245	5.1 Preparation Met	hod: EP	A 245.1			
Mercury	<0.00020	mg/L	0.00020	1	09/06/17 16:45	09/07/17 13:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	hod: SM 2540	OC					
Total Dissolved Solids	1840	mg/L	5.0	1		08/18/17 09:10	1	
1500H+ pH, Electrometric	Analytical Met	hod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		08/18/17 12:49	1	H6
800.0 IC Anions 28 Days	Analytical Met	hod: EPA 300	0.0					
Chloride	201	mg/L	20.0	20		09/08/17 10:21	16887-00-6	
Fluoride	0.85	mg/L	0.20	1		09/06/17 19:53	16984-48-8	
Sulfate	950	mg/L	100	100		09/08/17 11:06	14808-79-8	



Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

Date: 09/11/2017 12:18 PM

QC Batch: 492993 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60251121001

METHOD BLANK: 2017225 Matrix: Water

Associated Lab Samples: 60251121001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 09/07/17 12:52

LABORATORY CONTROL SAMPLE: 2017226

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0050 100 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2017227 2017228

MS MSD 60251119001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual .005 0.0049 0.0048 97 70-130 2 20 Mercury mg/L < 0.00020 .005 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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

Date: 09/11/2017 12:18 PM

QC Batch: 491466 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60251121001

METHOD BLANK: 2011490 Matrix: Water

Associated Lab Samples: 60251121001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	< 0.0050	0.0050	08/28/17 17:03	
Beryllium	mg/L	< 0.0010	0.0010	08/28/17 17:03	
Boron	mg/L	<0.10	0.10	08/28/17 17:03	
Calcium	mg/L	<0.10	0.10	08/28/17 17:03	
Chromium	mg/L	< 0.0050	0.0050	08/28/17 17:03	
Lead	mg/L	< 0.0050	0.0050	08/28/17 17:03	
Lithium	mg/L	<0.010	0.010	08/28/17 17:03	

LABORATORY CONTROL SAMPLE:	2011491					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.0	101	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.98	98	85-115	
∟ead	mg/L	1	1.0	105	85-115	
ithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 201149	92		2011493							
			MS	MSD								
	6	0250872002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	244 ug/L	1	1	1.3	1.3	106	102	70-130	3	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Boron	mg/L	484 ug/L	1	1	1.5	1.5	104	100	70-130	3	20	
Calcium	mg/L	54900 ug/L	10	10	67.7	65.9	127	110	70-130	3	20	
Chromium	mg/L	ND	1	1	1.0	0.99	102	98	70-130	4	20	
Lead	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Lithium	mg/L	21.7 ug/L	1	1	1.1	1.0	103	101	70-130	2	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.: 60251121

Date: 09/11/2017 12:18 PM

QC Batch: 491169 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60251121001

METHOD BLANK: 2010358 Matrix: Water

Associated Lab Samples: 60251121001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/28/17 15:43	
Arsenic	mg/L	< 0.0010	0.0010	08/28/17 15:43	
Cadmium	mg/L	< 0.00050	0.00050	08/28/17 15:43	
Cobalt	mg/L	< 0.0010	0.0010	08/28/17 15:43	
Molybdenum	mg/L	< 0.0010	0.0010	08/28/17 15:43	
Selenium	mg/L	< 0.0010	0.0010	08/28/17 15:43	
Thallium	mg/L	< 0.0010	0.0010	08/28/17 15:43	

LABORATORY CONTROL SAMPLE:	2010359					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.041	102	85-115	
Cadmium	mg/L	.04	0.040	99	85-115	
Cobalt	mg/L	.04	0.040	101	85-115	
Molybdenum	mg/L	.04	0.040	101	85-115	
Selenium	mg/L	.04	0.039	99	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 201036	60		2010361							
			MS	MSD								
	6	0250784001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	<0.00013	.04	.04	0.037	0.036	91	89	70-130	3	20	
Arsenic	mg/L	0.00092J	.04	.04	0.036	0.036	88	87	70-130	1	20	
Cadmium	mg/L	< 0.000089	.04	.04	0.032	0.031	80	79	70-130	2	20	
Cobalt	mg/L	0.0038J	.04	.04	0.039	0.038	87	86	70-130	1	20	
Molybdenum	mg/L	0.0048J	.04	.04	0.048	0.048	109	107	70-130	1	20	
Selenium	mg/L	< 0.00043	.04	.04	0.030	0.031	75	77	70-130	4	20	
Thallium	mg/L	<0.00018	.04	.04	0.033	0.033	83	81	70-130	2	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.: 60251121

QC Batch: 490385 Analysis Method: SM 2540C

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

Associated Lab Samples: 60251121001

METHOD BLANK: 2007444 Matrix: Water

Associated Lab Samples: 60251121001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/18/17 08:57

LABORATORY CONTROL SAMPLE: 2007445

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 988 99 80-120

SAMPLE DUPLICATE: 2007446

60251157001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 621 4 10 **Total Dissolved Solids** 599 mg/L

SAMPLE DUPLICATE: 2007447

Date: 09/11/2017 12:18 PM

ParameterUnits60251157015 ResultDup ResultMax RPDMax RPDTotal Dissolved Solidsmg/L371375110

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.: 60251121

QC Batch: 490368 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60251121001

SAMPLE DUPLICATE: 2007330

Date: 09/11/2017 12:18 PM

 Parameter
 Units
 60251056001 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 8.7
 8.7
 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.



EPA 300.0

300.0 IC Anions

Analysis Method:

Analysis Description:

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

QC Batch: 492909 QC Batch Method: EPA 300.0

Associated Lab Samples: 60251121001

METHOD BLANK: 2016940 Matrix: Water

Associated Lab Samples: 60251121001

> Blank Reporting Limit Parameter Units Result Analyzed Qualifiers < 0.20

Fluoride 0.20 09/06/17 18:51 mg/L

LABORATORY CONTROL SAMPLE: 2016941

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.5 2.5 100 90-110

MATRIX SPIKE SAMPLE: 2016944

Date: 09/11/2017 12:18 PM

60251775002 Spike MS MS % Rec Qualifiers Parameter Units Result Conc. Result % Rec Limits 0.52 105 80-120 Fluoride 2.5 3.1 mg/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.



Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

QC Batch: 493302 QC Batch Method: EPA 300.0 Analysis Method:

EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples: 60251121001

METHOD BLANK: 2018405

Matrix: Water

Associated Lab Samples:

Date: 09/11/2017 12:18 PM

Chloride

Chloride

Sulfate

Sulfate

60251121001

Blank Reporting

<1.0

<1.0

Parameter Units Result

mg/L

mg/L

mg/L

Limit 1 Analyzed Qualifiers

1.0 09/08/17 08:52 1.0 09/08/17 08:52

LABORATORY CONTROL SAMPLE: 2018406

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers mg/L 5 4.8 97 90-110 mg/L 5 5.0 99 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2018407

2018408

	6	60251775001	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	31.7	50	50	82.5	81.3	102	99	80-120	2	15	
Sulfate	mg/L	142	50	50	203	197	121	110	80-120	3	15	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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

Sample: BAA-7-081617 PWS:	Lab ID: 602511 Site ID:	21001 Collected: 08/16/17 11:47 Sample Type:	Received:	08/17/17 07:50	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.126 ± 0.463 (0.889) C:NA T:91%	pCi/L	08/29/17 20:47	7 13982-63-3	
Radium-228	EPA 904.0	0.423 ± 0.366 (0.736) C:76% T:79%	pCi/L	08/31/17 16:19	9 15262-20-1	
Total Radium	Total Radium Calculation	0.549 ± 0.829 (1.63)	pCi/L	09/05/17 12:59	9 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251121

QC Batch: 269145 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60251121001

METHOD BLANK: 1324788 Matrix: Water

Associated Lab Samples: 60251121001

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

 Radium-226
 0.560 ± 0.480 (0.650) C:NA T:80%
 pCi/L
 08/29/17 20:30

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.: 60251121

QC Batch: 269257 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60251121001

METHOD BLANK: 1325053 Matrix: Water

Associated Lab Samples: 60251121001

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

 Radium-228
 0.427 ± 0.337 (0.668) C:79% T:86%
 pCi/L
 08/31/17 16:17

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.: 60251121

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: 09/11/2017 12:18 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.: 60251121

Date: 09/11/2017 12:18 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251121001	BAA-7-081617	EPA 200.7	491466	EPA 200.7	491538
60251121001	BAA-7-081617	EPA 200.8	491169	EPA 200.8	491198
60251121001	BAA-7-081617	EPA 245.1	492993	EPA 245.1	493149
60251121001	BAA-7-081617	EPA 903.1	269145		
60251121001	BAA-7-081617	EPA 904.0	269257		
60251121001	BAA-7-081617	Total Radium Calculation	270486		
60251121001	BAA-7-081617	SM 2540C	490385		
60251121001	BAA-7-081617	SM 4500-H+B	490368		
60251121001	BAA-7-081617	EPA 300.0	492909		
60251121001	BAA-7-081617	EPA 300.0	493302		



Sample Condition Upon Receipt



Client Name: Wester Energy)s	
Courier: FedEx □ UPS □ VIA 🗹 Clay □	PEX □ ECI □	Pace ☐ Xroads ☐ Client ☐ Other ☐	
Tracking #:	ace Shipping Label Used	d? 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: (-266) / T-239 Type	of Ice: Wet Blue No		
Cooler Temperature (°C): As-read 30 Corr. Fa	ctor 9 0.0 CF +0.3 Correct	ted 3 Date and initials of person examining contents:	1
Temperature should be above freezing to 6°C	=======================================	p 8/17/17	
Chain of Custody present:	Yes ONO ON/A		
Chain of Custody relinquished:	Yes ONO ON/A		
Samples arrived within holding time:	Yes □No □N/A	2	
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 ONO ON/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 ☑N/A	*:	
Sample labels match COC: Date / time / ID / analyses	Yes □No □N/A		
Samples contain multiple phases? Matrix:	Yes No N/A	11	
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 TPḤ, OK-DRO)	,		
Cyanide water sample checks: N/A	8	-	
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	ld? □Yes □No □N/A		
	to Client? Y / N	Field Data Required? Y / N	
Person Contacted: Date	e/Time:		
Comments/ Resolution:			
Project Manager Review:	Date	: 8/17/17	
, and the same of			



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 E Required		Informa	ation:						ion C e Info		on:													Γ	Page:	- 1	of	1	7
ompany	: WESTAR ENERGY	Report To:	Bran	don G	Briffin					Attent	tion:	J	ared	Mori	risor	ı					7					_					
ddress:	818 Kansas Ave	Сору То:	Jare	d Morr	rison, He	eath Horr	nya		İ	Comp	any N	lame:	W	ESTA	AR E	NEF	RGY				RE	GUL	ATO	RY A	GEN	CY				ı,	
	Topeka, KS 66612									Addre	ess:		SE	E SE	СТІ	ON A	4				Ŀ	NP	DE\$	Г	GRO	UND	WATE	R C	DRINKING	WATE	:R
mail To	brandon.l.griffin@westarenergy.com	Purchase (Order N	lo.:						Pace C											-	US	Т		RCR	Α		Γ	OTHER	_	
hone:	(785) 575-8135 Fax:	Project Na	me:	JEC C	CCR Gro	oundwate	er.				Project	Н	leath	er W	ilso	n, 91	3-56	3-14	07		S	ite Lo	cation	n							
Request	ed Due Date/TAT: 7 DAY	Project Nu	mber:								Profile	#: 9	657,	1								S	TATE	:	K	(S	_				
																		Re	eque	stec	i Ana	lysi	s Filte	ered	(Y/N)	F	1///				
	Section D Valid Matrix C		left)	AP)		COLLI	ECTED					Pi	reser	vativ	es.		N/A														
TIEM#	Required Client Information MATRIX DRINKING WATER WASTE WAS	CODE DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPC STAR	OSITE	COMPOSEND/GR		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	- Unpreserved	H ₂ SO ₄			Na ₂ S ₂ O ₃	Other	lysis Test↓	200.7 Total Metals*	200.8 Total Metals**	300 CLEI SOA	4500 H+B	2540C TDS	Radium 226 Radium 228				Residual Chlorine (Y/N)		25 (I	lo./ La	b I.D. 2-0 ar
2	5/// / 0 0 5/ /			6			9/ [4	17 17	\dashv	•	+	_	-	Н	\top	+		Н	+	+	+	H	+	+		+	+	101	. 26	/4 /	
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	Page																												70		
	ge 28 of 30						PRINT Nam	AND SIGNA ie of SAMPL E of SAMPL	ER:	B	16	2	en V	_	G	cit	Fr	DA	TE S	igned	08	/10	5/1	7			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)

Chain of Custody



	korder: 60251121	Workorder	Name:JEC CC	R GROUNDWA	ATER		0	wne	Rece	eived	Date	e: 8	3/17/20	17	Res	ults F	Sennes	sted By	: 9/11/2017
Repo	ort To		Subcontra	ct To		ianimista Animista	unidada.		ive skaleti			0000000	Requ		Analy	sis	150/150.G800a	omedidititists	· OTTTZOTT
Pace 9608 Lene	ther Wilson e Analytical Kansas 3 Loiret Blvd. exa, KS 66219 ne 1(913)563-1407		WEET DOOR	served		· Moor Asian	Radium-228	.226 & Total Radium											
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ltem	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HN03		WAT/7702-11111111111111111111111111111111111		nneannacht(ebde	Radium	National Action Committee				and the second second	Notice and the second debits and the second	WATER THE PROPERTY OF THE PROP	LAB USE ONLY
1	BAA-7-081617	PS	8/16/2017 11:47	60251121001	Water	2				+	Х				-	-			LAB USE ONLY
2																_	-	-	
3															_				***
4					~~~~					_						<u> </u>	1		
5					·											-			
4666				lar oy kan en eg nam i	si apriliudi stati	tiones salta	GENT HAR FLANCE									Comn	nents		
Trans	sfers Released By		Date/Time	Received B				I	Date/Ti	me					***************************************		***************************************		
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Coo	ler Temperature on R	Receipt <u>W∖</u> A	<u> c°C Cus</u>	tody Seal Y	or 📏)	R	ecei	ved o	n Ice	Υ	ok	N			Sam	ples In	tac(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.

WO#:30227611



Sample Condition Upon Rec	eihr i	HIG	ոսու	911			Su				
PaceAnalytical Client Name:		Ol.	711		165	Pro	3 () # ject	26	27 (
; Onerte rvarie,		T	10	-1	(Com C)	_ ' ' ' ' '	joot n				
Courler: Ded Ex DUPS DUSPS Delie			ercial	□	ace Other			La LIMS Lo	ibel_{	71	VI_
Tracking #:								LINS LC	gin V	110	
Custody Seal on Cooler/Box Present:	•			als Intac		∐no					
Thermometer Used \(\int\) \(\frac{1}{4}\)					ne (None					•	
Cooler Temperature Observed Temp	4,200	- "C	Coi	rrectio	r Factor:	°C	Final '	remp:	, , , , , , , , , , , , , , , , , , ,	`	C
Temp should be above freezing to 6°C						TO	ate and f	nitials of	person e	(am ni	ing
Comments:	Yes	Ио	N//	4			ate and I contents	-21	- 8(1	2/1	
Chain of Custody Present:	· ·			1.			55.00				
Chain of Custody Filled Oul:				2.							
Chain of Custody Relinquished;				3,							
Sampler Name & Signature on COC:				4.							
Sample Labels match COC:				5.							
-Includes date/time/ID Matrix:	WT	-									
Samples Arrived within Hold Time:	-			6.							
Short Hold Time Analysis (<72hr remaining):		-		7.							
Rush Turn Around Time Requested:				8.							
Sufficient Volume:	_			9.							
Correct Containers Used;				10.							
-Pace Containers Used:				1							
Containers Intact:	/			11.							
Orthophosphate field filtered				12.							
Organic Samples checked for dechlorination:			_	13.							
Filtered volume received for Dissolved tests				14.							
Il containers have been checked for preservation.	-			15.	014	7					
ul containers needing preservation are found to be in ompliance with EPA recommendation.					PHC						
xceptions: VOA, coliform, TOC, O&G, Phenolics				Initial w	7.4.1	Date/tim preserva					
Acceptions. VOA, Comonn, 100, Cao, 1 henoido				Lot # of		Pionessi	411011				
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eadspace in VOA Viais (>6mm):				16.							
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rip Blank Custody Seals Present ad Aqueous Samples Screened > 0.5 mrem/hr				Initial wi	nen ~7 .			Λ			—
ad Addeods Samples Screened > 0.0 Milenvill				complet		Date:	8/18	<u> </u>		····	
llent Notification/ Resolution:							•	·			
Person Contacted:			ale/T	lme: _		c	ontacted	В <u>у:</u>			
Comments/ Resolution:											
											
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										··········	_

Note: Whenever there is a discrepancy affecting North Carolina compilance 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 18, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60251633

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 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

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251633

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

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
Litah/TNI Certification #: PA014572015-5

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Jersey/TNI Certification #: PA 051

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

North Carolina Certification #: 42706

North Dakota Certification #: R-190

New Hampshire/TNI Certification #: 2976

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.: 60251633

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251633001	BAA-7-082317	Water	08/23/17 09:44	08/24/17 07:09



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251633

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251633001	BAA-7-082317	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	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	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251633

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Method: EPA 903.1

Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:September 18, 2017

General Information:

1 sample was 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.: 60251633

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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-7-082317 (Lab ID: 60251633001)

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.: 60251633

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 18, 2017

General Information:

1 sample was 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.: 60251633

Date: 09/18/2017 09:00 AM

Sample: BAA-7-082317	Lab ID: 602	251633001	Collected: 08/23/1	7 09:44	Received: 08	3/24/17 07:09 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	0.033	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:28	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/25/17 12:14	08/28/17 17:28	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1		08/28/17 17:28		
Calcium, Total Recoverable	230	mg/L	0.10	1		08/28/17 17:28		
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:28	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1		08/28/17 17:28		
_ithium	0.012	mg/L	0.010	1	08/25/17 12:14	08/28/17 17:28	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	08/26/17 10:43	08/28/17 17:38	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:38	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/26/17 10:43	08/28/17 17:38	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:38	7440-48-4	
Molybdenum, Total Recoverable	0.074	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:38	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:38	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:38	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	09/13/17 16:05	09/14/17 12:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Met	thod: SM 2540	OC					
Total Dissolved Solids	1850	mg/L	5.0	1		08/26/17 15:34		
4500H+ pH, Electrometric	Analytical Met	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.3	Std. Units	0.10	1		08/26/17 14:43		H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 300	.0					
Chloride	199	mg/L	20.0	20		09/12/17 18:37	16887-00-6	
Fluoride	0.78	mg/L	0.20	1		09/12/17 18:22	16984-48-8	
Sulfate	926	mg/L	100	100		09/13/17 12:42	14808-79-8	



EPA 245.1

245.1 Mercury

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251633

Date: 09/18/2017 09:00 AM

QC Batch: 494071 Analysis Method:
QC Batch Method: EPA 245.1 Analysis Description:

Associated Lab Samples: 60251633001

METHOD BLANK: 2021073 Matrix: Water

Associated Lab Samples: 60251633001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 09/14/17 12:07

LABORATORY CONTROL SAMPLE: 2021074

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0051 101 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021075 2021076

MS MSD 60251633001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0044 85 70-130 20 Mercury mg/L < 0.00020 .005 .005 0.0042 88

MATRIX SPIKE SAMPLE: 2021077 60252592002 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers ND 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.: 60251633

Date: 09/18/2017 09:00 AM

QC Batch: 491466 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60251633001

METHOD BLANK: 2011490 Matrix: Water

Associated Lab Samples: 60251633001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	< 0.0050	0.0050	08/28/17 17:03	
Beryllium	mg/L	< 0.0010	0.0010	08/28/17 17:03	
Boron	mg/L	<0.10	0.10	08/28/17 17:03	
Calcium	mg/L	<0.10	0.10	08/28/17 17:03	
Chromium	mg/L	< 0.0050	0.0050	08/28/17 17:03	
Lead	mg/L	< 0.0050	0.0050	08/28/17 17:03	
Lithium	mg/L	<0.010	0.010	08/28/17 17:03	

LABORATORY CONTROL SAMPLE:	2011491					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	mg/L		1.0	101	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	105	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 201149	92		2011493							
			MS	MSD								
	6	0250872002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	244 ug/L	1	1	1.3	1.3	106	102	70-130	3	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Boron	mg/L	484 ug/L	1	1	1.5	1.5	104	100	70-130	3	20	
Calcium	mg/L	54900 ug/L	10	10	67.7	65.9	127	110	70-130	3	20	
Chromium	mg/L	ND	1	1	1.0	0.99	102	98	70-130	4	20	
Lead	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Lithium	mg/L	21.7 ug/L	1	1	1.1	1.0	103	101	70-130	2	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.: 60251633

Date: 09/18/2017 09:00 AM

QC Batch: 491610 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60251633001

METHOD BLANK: 2012290 Matrix: Water

Associated Lab Samples: 60251633001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/28/17 17:32	
Arsenic	mg/L	< 0.0010	0.0010	08/28/17 17:32	
Cadmium	mg/L	< 0.00050	0.00050	08/28/17 17:32	
Cobalt	mg/L	< 0.0010	0.0010	08/28/17 17:32	
Molybdenum	mg/L	< 0.0010	0.0010	08/28/17 17:32	
Selenium	mg/L	< 0.0010	0.0010	08/28/17 17:32	
Thallium	mg/L	< 0.0010	0.0010	08/28/17 17:32	

LABORATORY CONTROL SAMPLE:	2012291					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.038	96	85-115	
Arsenic	mg/L	.04	0.039	99	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.038	95	85-115	
Molybdenum	mg/L	.04	0.039	96	85-115	
Selenium	mg/L	.04	0.039	98	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 201229	92		2012293							
Parameter	6 Units	0251633001 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	0.037	0.038	93	94	70-130		20	
Arsenic	mg/L	< 0.0010	.04	.04	0.040	0.040	97	98	70-130	1	20	
Cadmium	mg/L	< 0.00050	.04	.04	0.035	0.035	86	87	70-130	1	20	
Cobalt	mg/L	0.0013	.04	.04	0.037	0.038	90	91	70-130	1	20	
Molybdenum	mg/L	0.074	.04	.04	0.12	0.12	108	111	70-130	1	20	
Selenium	mg/L	< 0.0010	.04	.04	0.037	0.037	91	92	70-130	0	20	
Thallium	mg/L	< 0.0010	.04	.04	0.035	0.035	88	88	70-130	1	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.: 60251633

QC Batch: 491618 Analysis Method: SM 2540C

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

Associated Lab Samples: 60251633001

METHOD BLANK: 2012388 Matrix: Water

Associated Lab Samples: 60251633001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/26/17 15:28

LABORATORY CONTROL SAMPLE: 2012389

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 984 98 80-120

SAMPLE DUPLICATE: 2012392

60251710001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 15700 2 10 **Total Dissolved Solids** 16000 mg/L

SAMPLE DUPLICATE: 2012393

Date: 09/18/2017 09:00 AM

60251710004 Dup Max RPD RPD Parameter Units Result Result Qualifiers 19000 **Total Dissolved Solids** mg/L 19000 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.: 60251633

QC Batch: 491501 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60251633001

SAMPLE DUPLICATE: 2011638

Date: 09/18/2017 09:00 AM

60251559001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 5.8 pH at 25 Degrees C 5 H6 Std. Units 5.8 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.:

60251633

QC Batch: 493864 QC Batch Method: EPA 300.0 Analysis Method:

EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples: 60251633001

METHOD BLANK: 2020308

Matrix: Water

Associated Lab Samples:

Chloride

Fluoride

Chloride

Fluoride

60251633001

Blank Reporting

< 0.20

Parameter

Result <1.0 Limit Analyzed

1.0 09/12/17 15:38 0.20 09/12/17 15:38

93

LABORATORY CONTROL SAMPLE:

Parameter

2020309

Units

mg/L

mg/L

Units

mg/L

mg/L

Spike LCS LCS Conc. Result % Rec 5 4.6 2.5 2.3

% Rec Limits 90-110

90-110

Qualifiers

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

2020310

2020311

		60252175001	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	254	250	250	514	500	104	98	80-120	3	15	
Fluoride	mg/L	ND	125	125	129	125	103	100	80-120	3	15	

MATRIX SPIKE SAMPLE:

Date: 09/18/2017 09:00 AM

2020312

Parameter	Units	60252175002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	224	250	474	100	80-120	
Fluoride	mg/L	ND	125	127	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.: 602

60251633

QC Batch:
QC Batch Method:

493957

EPA 300.0

Analysis Method:

EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples: 60251633001

METHOD BLANK: 2020640

Matrix: Water

Associated Lab Samples:

60251633001

Blank

Reporting

Parameter

Units

Result Limit

Analyzed

97

Qualifiers

Sulfate

Sulfate

Sulfate

Sulfate

mg/L

<1.0

1.0 09/13/17 11:43

LABORATORY CONTROL SAMPLE: 2020641

Parameter

Units mg/L

60252145005

Result

38.3

Spike Conc. LCS Result LCS % Rec % Rec Limits

103

90-110

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

2020642

2020643

4.8

MS Spike

Conc.

25

MSD Spike

Conc.

25

MS Result

64.0

MS % Rec MSD % Rec

107

102

% Rec Max Limits RPD RPD

 $\frac{\text{RPD}}{0} \frac{\text{RPD}}{15} \frac{\text{Qual}}{}$

MATRIX SPIKE SAMPLE:

Date: 09/18/2017 09:00 AM

Parameter

2020644

Units

mg/L

 Parameter
 Units

 mg/L

60252145006 Result Spike Conc. MS Result

MSD

Result

63.8

MS % Rec % Rec Limits

80-120

80-120

its Qualifiers

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

Calculation

Pace Project No.: 60251633

Sample: BAA-7-082317 Lab ID: 60251633001 Collected: 08/23/17 09:44 Received: 08/24/17 07:09 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.642 \pm 0.503 \quad (0.591)$ Radium-226 pCi/L 09/05/17 22:30 13982-63-3 C:NA T:79% EPA 904.0 $0.443 \pm 0.439 \quad (0.911)$ Radium-228 pCi/L 09/07/17 15:58 15262-20-1 C:77% T:79% Total Radium Total Radium $1.09 \pm 0.942 \quad (1.50)$ pCi/L 09/10/17 12:52 7440-14-4



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251633

QC Batch: 269996 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60251633001

METHOD BLANK: 1328673 Matrix: Water

Associated Lab Samples: 60251633001

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

 Radium-226
 0.209 ± 0.410 (0.750) C:NA T:87%
 pCi/L
 09/05/17 21:41

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.: 60251633

QC Batch: 270008 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60251633001

METHOD BLANK: 1328710 Matrix: Water

Associated Lab Samples: 60251633001

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

 Radium-228
 0.475 ± 0.397 (0.799) C:78% T:78%
 pCi/L
 09/07/17 15:57

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.: 60251633

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: 09/18/2017 09:00 AM

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.: 60251633

Date: 09/18/2017 09:00 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251633001	BAA-7-082317	EPA 200.7	491466	EPA 200.7	491538
60251633001	BAA-7-082317	EPA 200.8	491610	EPA 200.8	491629
60251633001	BAA-7-082317	EPA 245.1	494071	EPA 245.1	494160
60251633001	BAA-7-082317	EPA 903.1	269996		
60251633001	BAA-7-082317	EPA 904.0	270008		
60251633001	BAA-7-082317	Total Radium Calculation	271118		
60251633001	BAA-7-082317	SM 2540C	491618		
60251633001	BAA-7-082317	SM 4500-H+B	491501		
60251633001	BAA-7-082317	EPA 300.0	493864		
60251633001	BAA-7-082317	EPA 300.0	493957		



Sample Condition Upon Receipt

WO#: 60251633

Client Name: w&far Energy			
Courier: FedEx □ UPS □ VIA Z 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	No □	
Packing Material: Bubble Wrap ☐ Bubble Bags I	□ Foam □	None Oth	er 🗆
Thermometer Used: 1-266 T-239 Type of	fice: Wet Blue No	ne	
Cooler Temperature (°C): As-read / C Corr. Fact	tor <u>coocf +0.3</u> Correct	ted /- 8	Date and initials of person examining contents:
Temperature should be above freezing to 6°C			pv8/24/17
Chain of Custody present:	Yes ONo ON/A		1
Chain of Custody relinquished:	ZYes □No □N/A		v
Samples arrived within holding time:	Yes □No □N/A	541	[2]
Short Hold Time analyses (<72hr): $\gamma \sim 8/\nu \gamma/17$	es ONO ON/A	pH	
Rush Turn Around Time requested:	□Yes No □N/A		
Sufficient volume:	ØYes. □No. □N/A	KC_4	
Correct containers used:	Yes ONO ON/A	7	
Pace containers used:	Yes ONO ON/A		
Containers intact:	ZYes □No □N/A	¥	E.
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?	Yes □No □N/A		
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	′	10	
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks: N/A		i i	
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 ZN/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 to		Field Data Required?	Y / N
Person Contacted: Date/T	ime:		
Comments/ Resolution:			-
<u> </u>			
Ang III		*hula	
Project Manager Review:	Date	QaTIII	



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

Required Client Information:	Section B Required Project					In		Inform														Pa	ige:	× [of	1	
Company: WESTAR ENERGY	Report To: Brai	ndon Griffin				At	tentio	n:			orriso						L										
Address: 818 Kansas Ave	Copy To: Jare	ed Morrison, H	leath Hori	nya		Co	ompar	ny Nar	ne: \	VES.	TAR	ENEF	RGY				RE	GUL	ATOF	RY A	GENCY	,				1	
Topeka, KS 66612						Ac	ddress	3:	S	EE S	SECT	ION	Ą				P	NPE	DES		GROUN	ND W	/ATEI	RГ	DRINKIN	G WATI	ER
Email To: brandon.l.griffin@westarenergy.com	Purchase Order	No.:					ace Qu										[UST	-	Γ	RCRA			П	OTHER	_	
Phone: (785) 575-8135 Fax:	Project Name:	JEC CCR G	oundwate	эг		Pa	ace Pro	ject	Hea	ther '	Wilso	n, 91	3-563	3-140	07		Sit	te Lo	cation	T							
Requested Due Date/TAT: 7 DAY	Project Number:							ofile #:	965	7, 1	T						Ē	Sī	TATE:	-	KS		-				
														Re	que	sted	Ana	lysis	Filte	red (Y/N)	_[
Section D Valid Matrix Co	odes (je o	OMP)	COLL	ECTED					Pres	ervai	tives		N /A														
WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR (A-Z, 0-9 /,-) OTHER	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	POSITE PRT	COMPOSI END/GRA	i d	SAMPLE LEMP AI COLLECTION	# OF CONTAINERS	Unpreserved H ₂ SO₄	HNO3	J. J. J. J. J. J. J. J. J. J. J. J. J. J	Na ₂ S ₂ O ₃	Methanol	₽ Analysis Test	200.7 Total Metals*	200.8 Total Metals**	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 228				Residual Chlorine (Y/N)	6	N51	633	
			TIME	DATE		-	_	힐호	-	Z Z	ž	žŏ		욊		1 8	55	25	~ ~			\sqcup	_		Project		
1 BAA-7-082317	41	6		8/23	0944	1	4	1	3					1	_	1	Н			Ш	\perp	Н	4	IBPlu	381	OIN	01
2						+	_	_	\vdash	+	\sqcup	4		4	+	-	Н	_	_	Н		_	\perp				
3						4	_	_	\vdash	_	\perp			_	_	1	Н	-	_	\vdash	_		-				
4						4	4	_	\vdash	4	44	-		\dashv	_	+	Н	4	_	\vdash		Ц	4				
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7						+	+	+	+	+	+	-	-	-	+	+	Н		+	Н	-	Н	\dashv				
8						+	\dashv	+	\vdash	+	+	-	-	\dashv	+	+	Н	+	+	\vdash	-	\vdash	+			_	
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ADDITIONAL COMMENTS	REI	INQUISHED BY	AFFILIATI	ION	DATE	t	TIR	ME		ill,	ACC	EPTE	D BY	AFF	ILIATI	ON		D	ATE		TIME			SAMP	LE CONDI	TIONS	
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li **200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	18	11/1	westa	V	8/23/1	7	141	15	-	a	m	N	124	Z	5			8/	2 <i>4//</i>	20	709	1-	0	7	Y	7	,
																								25			
0																									D		
Page 28 of 30			SAMPL		ND SIGNAT of SAMPLE of SAMPLE	R:	B.	ran	don	,	6	rit	fi.	DA	TE SI	gned	08	8/.	23/	11	7	Temp in °C		Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)		Samples Intact (Y/N)

Chain of Custody



	korder: 60251633	Workorder I	Name:JEC CCF		ATER		Ow	ner R	eceiv	ved l	Date:	8/24/2017	Results	Requested By	r: 9/18/2017
Repo	rt To		Subcontrac	t To			invigisedise.		imigotj	udya hi	a (dejule ya	Requeste	d Analysis	tarnayang salaway na ayyar	
Pace 9608 Lene	her Wilson Analytical Kansas Loiret Blvd. xa, KS 66219 e 1(913)563-1407		1638 I Suites Green	Analytical Pittsb Roseytown Roa 2,3, & 4 sburg, PA 1560 (724)850-5600	d)1		erved C			Radium-228	226 & Total Radium		:302		
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	EONH	erved	ontaine	15	WIND THE PROPERTY OF THE PROPE	Radium-	302284			LAB USE ONLY
1	BAA-7-082317	PS	8/23/2017 09:44	60251633001	Water	2				Х	x				00/
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3															
4						-	-								
5				hagas) rompeonaciae		8800 May (1890)	se arcijeni		3541530000	91220000	Planes kydro a s	evestosessitäitatta liinaas		mments	
Trans	1		Date/Time	Received B	ν			Dat	e/Tim	e e			<u> </u>	aiments);;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	
1	Ben B	W D	8/25/17 1	708	781	-	7	41	701.	. TT. \	530				
2) (T				1-1-1-1	`					
3		*													
Coo	<u>ler Temperature on F</u>	Receipt UIA	_°C	stody Seal Y	or (N		Re	ceive	d on	lce	Υo	r (N	Sa	mples 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.

Pittsburgh Lab Sample Condition Upon Receipt Courier: Fed Ex UPS USPS Client Commercial Pace Other Tracking #: 778565961981 Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no Thermometer Used _______ Type of Ice: Wet Blue (None Cooler Temperature Observed Temp ____ °C Correction Factor: __ °C Final Temp: ___ ° C Temp should be above freezing to 6°C Date and Initials of person examining contents: 711 8/29/17 N/A Yes No Comments: Chain of Custody Present: Chain of Custody Filled Out: 3. Chain of Custody Relinquished: Sampler Name & Signature on COC: Sample Labels match COC: いんて Matrix:_ -Includes date/time/ID Samples Arrived within Hold Time: 7. Short Hold Time Analysis (<72hr remaining): 8. Rush Turn Around Time Requested: Sufficient Volume: _ 10. Correct Containers Used: -Pace Containers Used: 11. Containers Intact: 12. Orthophosphate field filtered 13. Hex Cr Aqueous Compliance/NPDES sample field filtered 14. Organic Samples checked for dechlorination: 15. Filtered volume received for Dissolved tests All containers have been checked for preservation. 16. PHLZI All containers needing preservation are found to be in compliance with EPA recommendation. Date/time of Initial when ZH preservation completed exceptions: VOA, coliform, TOC, O&G, Phenolics Lot # of added preservative 17. Headspace in VOA Vials (>6mm): 18. Trip Blank Present: Trip Blank Custody Seals Present Initial when Rad Aqueous Samples Screened > 0.5 mrem/hr completed: 24 Date: 8/29(194 Client Notification/ Resolution: Date/Time: Contacted By: Person Contacted: Comments/ Resolution: ☐ A check in this box indicates that additional information has been stored 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.



September 21, 2017

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

RE: Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 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

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

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

Notifi Carolina Certification #. 42700

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.: 60251948

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251948001	BAA-7-082817	Water	08/28/17 11:55	08/29/17 07:05
60251948002	DUP-082817	Water	08/28/17 06:00	08/29/17 07:05



SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251948001	BAA-7-082817	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	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60251948002	DUP-082817	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	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Method: EPA 200.7

Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 21, 2017

General Information:

2 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: 491981

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60251805001

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

- MS (Lab ID: 2013432)
 - Calcium
- MSD (Lab ID: 2013433)
 - Calcium



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Method: EPA 200.8

Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 21, 2017

General Information:

2 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.

QC Batch: 491980

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60251805002

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

- MS (Lab ID: 2013426)
 - Antimony
 - Arsenic
 - Cadmium
 - Cobalt
 - Selenium
- MSD (Lab ID: 2013427)
 - Antimony
 - Arsenic
 - Cadmium
 - Cobalt
 - Selenium





PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Method: EPA 200.8

Description:200.8 MET ICPMSClient:WESTAR ENERGYDate:September 21, 2017



PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Method: EPA 245.1
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 21, 2017

General Information:

2 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.: 60251948

Method: EPA 903.1

Description: 903.1 Radium 226 **Client:** WESTAR ENERGY **Date:** September 21, 2017

General Information:

2 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.: 60251948

Method: EPA 904.0

Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 21, 2017

General Information:

2 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.: 60251948

Method:Total Radium CalculationDescription:Total Radium 228+226Client:WESTAR ENERGYDate:September 21, 2017

General Information:

2 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.: 60251948

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: WESTAR ENERGY

Date: September 21, 2017

General Information:

2 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.: 60251948

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 21, 2017

General Information:

2 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-7-082817 (Lab ID: 60251948001)
- DUP-082817 (Lab ID: 60251948002)

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.: 60251948

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 21, 2017

General Information:

2 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.: 60251948

Date: 09/21/2017 12:09 PM

Sample: BAA-7-082817	Lab ID: 60	251948001	Collected: 08/28/1	7 11:55	Received: 08	8/29/17 07:05 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	0.033	mg/L	0.0050	1	08/29/17 12:19	08/30/17 14:31	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	08/30/17 14:31	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1	08/29/17 12:19			
Calcium, Total Recoverable	222	mg/L	0.10	1	08/29/17 12:19			
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/17 12:19			
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/17 12:19			
_ithium	0.010	mg/L	0.010	1	08/29/17 12:19	08/30/17 14:31	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	08/29/17 12:19	09/05/17 11:55	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:55	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/17 12:19	09/05/17 11:55	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:55	7440-48-4	
Molybdenum, Total Recoverable	0.069	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:55	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:55	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:55	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	09/18/17 12:44	09/18/17 16:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	C					
Total Dissolved Solids	1760	mg/L	5.0	1		08/29/17 10:52		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500	-H+B					
pH at 25 Degrees C	7.4	Std. Units	0.10	1		08/30/17 12:58		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	195	mg/L	20.0	20		09/20/17 11:29	16887-00-6	
Fluoride	0.75	mg/L	0.20	1		09/19/17 16:39	16984-48-8	
Sulfate	936	mg/L	100	100		09/20/17 11:43	14808-79-8	



ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Date: 09/21/2017 12:09 PM

Sample: DUP-082817	Lab ID: 602	251948002	Collected: 08/28/1	7 06:00	Received: 08	3/29/17 07:05 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	0.032	mg/L	0.0050	1	08/29/17 12:19	08/30/17 14:35	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	08/30/17 14:35	7440-41-7	
Boron, Total Recoverable	1.3	mg/L	0.10	1	08/29/17 12:19			
Calcium, Total Recoverable	227	mg/L	0.10	1	08/29/17 12:19	08/30/17 14:35	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/17 12:19	08/30/17 14:35	7440-47-3	
Lead, Total Recoverable	<0.0050	mg/L	0.0050	1	08/29/17 12:19			
ithium	<0.010	mg/L	0.010	1	08/29/17 12:19	08/30/17 14:35	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	08/29/17 12:19	09/05/17 12:02	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	09/05/17 12:02	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	08/29/17 12:19	09/05/17 12:02	7440-43-9	
Cobalt, Total Recoverable	0.0013	mg/L	0.0010	1	08/29/17 12:19	09/05/17 12:02	7440-48-4	
Molybdenum, Total Recoverable	0.071	mg/L	0.0010	1	08/29/17 12:19	09/05/17 12:02	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	09/05/17 12:02	7782-49-2	
Γhallium, Total Recoverable	<0.0010	mg/L	0.0010	1	08/29/17 12:19	09/05/17 12:02	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	09/18/17 12:44	09/18/17 16:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	OC					
Total Dissolved Solids	1790	mg/L	5.0	1		08/29/17 10:52	!	
1500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
oH at 25 Degrees C	7.4	Std. Units	0.10	1		08/30/17 13:00)	H6
800.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	197	mg/L	20.0	20		09/20/17 11:58	16887-00-6	
Fluoride	0.74	mg/L	0.20	1		09/19/17 17:08	16984-48-8	
Sulfate	938	mg/L	100	100		09/20/17 12:12		



Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Date: 09/21/2017 12:09 PM

QC Batch: 494528 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 2023233 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury mg/L <0.00020 0.00020 09/18/17 15:57

LABORATORY CONTROL SAMPLE: 2023234

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury mg/L .005 0.0054 109 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2023235 2023236

MS MSD 60251947001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.0051 70-130 3 20 Mercury mg/L < 0.00020 .005 .005 0.0049 98 101

MATRIX SPIKE SAMPLE: 2023237

60253227001 Spike MS MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers 0.0051 ND 100 70-130 Mercury mg/L .005

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.: 60251948

Date: 09/21/2017 12:09 PM

QC Batch: 491981 Analysis Method: EPA 200.7

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

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 2013430 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/30/17 14:00	
Beryllium	mg/L	< 0.0010	0.0010	08/30/17 14:00	
Boron	mg/L	<0.10	0.10	08/30/17 14:00	
Calcium	mg/L	<0.10	0.10	08/30/17 14:00	
Chromium	mg/L	< 0.0050	0.0050	08/30/17 14:00	
Lead	mg/L	< 0.0050	0.0050	08/30/17 14:00	
Lithium	mg/L	< 0.010	0.010	08/30/17 14:00	

ABORATORY CONTROL SAMPLE:	2013431					
_		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
arium	mg/L	1	0.99	99	85-115	
eryllium	mg/L	1	0.99	99	85-115	
oron	mg/L	1	0.96	96	85-115	
lcium	mg/L	10	9.6	96	85-115	
omium	mg/L	1	0.98	98	85-115	
ad	mg/L	1	1.0	103	85-115	
iium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 20134:	32		2013433							
Parameter	6 Units	0251805001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.12	1	1	1.2	1.2	106	105	70-130	1	20	
Beryllium	mg/L	< 0.00033	1	1	1.0	1.0	104	102	70-130	2	20	
Boron	mg/L	1.8	1	1	2.9	2.8	109	98	70-130	4	20	
Calcium	mg/L	537	10	10	539	528	24	-87	70-130	2	20	M1
Chromium	mg/L	< 0.0014	1	1	1.0	0.98	103	98	70-130	5	20	
Lead	mg/L	0.0028J	1	1	0.89	0.91	89	91	70-130	2	20	
Lithium	mg/L	0.54	1	1	1.8	1.7	124	119	70-130	3	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.: 60251948

Date: 09/21/2017 12:09 PM

QC Batch: 491980 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 2013424 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	09/05/17 11:42	
Arsenic	mg/L	< 0.0010	0.0010	09/05/17 11:42	
Cadmium	mg/L	< 0.00050	0.00050	09/05/17 11:42	
Cobalt	mg/L	< 0.0010	0.0010	09/05/17 11:42	
Molybdenum	mg/L	< 0.0010	0.0010	09/05/17 11:42	
Selenium	mg/L	< 0.0010	0.0010	09/05/17 11:42	
Thallium	mg/L	< 0.0010	0.0010	09/05/17 11:42	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.041	102	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.040	101	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.040	101	85-115	
Thallium	mg/L	.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 201342	26		2013427							
			MS	MSD								
	6	0251805002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	0.00011J	.04	.04	0.027	0.027	67	67	70-130	0	20	M1
Arsenic	mg/L	0.0022	.04	.04	0.027	0.027	63	63	70-130	1	20	M1
Cadmium	mg/L	<0.000018	.04	.04	0.022	0.022	55	55	70-130	0	20	M1
Cobalt	mg/L	0.0072	.04	.04	0.034	0.034	67	67	70-130	0	20	M1
Molybdenum	mg/L	0.0074	.04	.04	0.042	0.041	86	84	70-130	2	20	
Selenium	mg/L	<0.000086	.04	.04	0.022	0.022	55	55	70-130	1	20	M1
Thallium	mg/L	<0.00018	.04	.04	0.035	0.035	87	88	70-130	1	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.: 60251948

QC Batch: 491906 Analysis Method: SM 2540C

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

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 2013226 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 08/29/17 09:32

LABORATORY CONTROL SAMPLE: 2013227

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 977 98 80-120

SAMPLE DUPLICATE: 2013228

60251761003 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 468 0 10 **Total Dissolved Solids** 467 mg/L

SAMPLE DUPLICATE: 2013229

Date: 09/21/2017 12:09 PM

ParameterUnits60251856007 ResultDup ResultRPDMax RPDQualifiersTotal Dissolved Solidsmg/L159162110

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.: 60251948

QC Batch: 492191 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60251948001, 60251948002

SAMPLE DUPLICATE: 2014091

Date: 09/21/2017 12:09 PM

 Parameter
 Units
 Result
 Dup Result
 RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 8.1
 8.1
 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.: 60251948

Date: 09/21/2017 12:09 PM

QC Batch: 494740 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 2023778 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

Parameter Units Result Limit Analyzed Qualifiers

Fluoride mg/L <0.20 0.20 09/19/17 15:40

LABORATORY CONTROL SAMPLE: 2023779

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.3 93 90-110

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.:

60251948

QC Batch: 494891 QC Batch Method: EPA 300.0 Analysis Method:

EPA 300.0

Analysis Description:

300.0 IC Anions

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 2024673 Matrix: Water

Associated Lab Samples:

60251948001, 60251948002

Blank

Reporting Limit

Parameter Units mg/L Result <1.0

Analyzed 09/20/17 10:02 1.0

Qualifiers

Sulfate

Chloride

mg/L

<1.0

1.0 09/20/17 10:02

2024674 LABORATORY CONTROL SAMPLE:

Parameter

Spike Conc.

LCS % Rec % Rec Limits

Qualifiers

Chloride Sulfate

Chloride

Chloride

Sulfate

mg/L mg/L

7573568001

Result

Units

5 5 4.7 4.8

MS

27.5

500

94 96 90-110 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

2024675

17.8

MS

Spike

Conc.

10

2024676

MSD Spike

10

Conc.

1430

LCS

Result

MSD Result Result

27.5

1340

2000

MS % Rec

98

MSD % Rec

108

115

97

% Rec Max Limits **RPD**

RPD Qual 0 15

MATRIX SPIKE SAMPLE:

Date: 09/21/2017 12:09 PM

Parameter

2024677

mg/L

60252961001 Parameter Units Result mg/L

Units

mg/L

Spike Conc. 802

MS Result 500

MS % Rec % Rec

80-120

Qualifiers Limits 80-120

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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Sample: BAA-7-082817 Lab ID: 60251948001 Collected: 08/28/17 11:55 Received: 08/29/17 07:05 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.602 \pm 0.447 \quad (0.589)$ Radium-226 pCi/L 09/11/17 12:57 13982-63-3 C:NA T:89% EPA 904.0 0.724 ± 0.478 (0.934) Radium-228 pCi/L 09/13/17 11:16 15262-20-1 C:74% T:89% Total Radium **Total Radium** 1.33 ± 0.925 (1.52) pCi/L 09/19/17 17:10 7440-14-4 Calculation



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

Sample: DUP-082817 Lab ID: 60251948002 Collected: 08/28/17 06:00 Received: 08/29/17 07:05 Matrix: Water PWS: Site ID: Sample Type: Act ± Unc (MDC) Carr Trac **Parameters** Method Units Analyzed CAS No. Qual EPA 903.1 $0.305 \pm 0.246 \quad (0.138)$ Radium-226 pCi/L 09/11/17 12:57 13982-63-3 C:NA T:92% EPA 904.0 0.964 ± 0.508 (0.918) Radium-228 pCi/L 09/13/17 11:17 15262-20-1 C:67% T:84% Total Radium **Total Radium** 1.27 ± 0.754 (1.06) pCi/L 09/19/17 17:10 7440-14-4 Calculation



QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER

Pace Project No.: 60251948

QC Batch: 270145 Analysis Method: EPA 904.0

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

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 1329310 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

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

 Radium-228
 0.0498 ± 0.287 (0.655) C:79% T:90%
 pCi/L
 09/13/17 11:16

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.: 60251948

QC Batch: 270142 Analysis Method: EPA 903.1

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

Associated Lab Samples: 60251948001, 60251948002

METHOD BLANK: 1329307 Matrix: Water

Associated Lab Samples: 60251948001, 60251948002

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

Radium-226 0.475 ± 0.377 (0.490) C:NA T:89% pCi/L 09/11/17 12:19

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.: 60251948

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: 09/21/2017 12:09 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.: 60251948

Date: 09/21/2017 12:09 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251948001 60251948002	BAA-7-082817 DUP-082817	EPA 200.7 EPA 200.7	491981 491981	EPA 200.7 EPA 200.7	492041 492041
60251948001 60251948002	BAA-7-082817 DUP-082817	EPA 200.8 EPA 200.8	491980 491980	EPA 200.8 EPA 200.8	492040 492040
60251948001 60251948002	BAA-7-082817 DUP-082817	EPA 245.1 EPA 245.1	494528 494528	EPA 245.1 EPA 245.1	494640 494640
60251948001 60251948002	BAA-7-082817 DUP-082817	EPA 903.1 EPA 903.1	270142 270142		
60251948001 60251948002	BAA-7-082817 DUP-082817	EPA 904.0 EPA 904.0	270145 270145		
60251948001 60251948002	BAA-7-082817 DUP-082817	Total Radium Calculation Total Radium Calculation	272308 272308		
60251948001 60251948002	BAA-7-082817 DUP-082817	SM 2540C SM 2540C	491906 491906		
60251948001 60251948002	BAA-7-082817 DUP-082817	SM 4500-H+B SM 4500-H+B	492191 492191		
60251948001	BAA-7-082817	EPA 300.0	494740		
60251948001	BAA-7-082817	EPA 300.0	494891		
60251948002	DUP-082817	EPA 300.0	494740		
60251948002	DUP-082817	EPA 300.0	494891		



Sample Condition Upon Receipt



Client Name: Wester Energy			
Courier: FedEx □ UPS □ VIA □ Clay □	PEX 🗆 ECI 🗆	Pace ☐ Xroads ☐ Client ☐ Other ☐	
Tracking #: Pa	ice Shipping Label Used	d? Yes □ No □	
Custody Seal on Cooler/Box Present: Yes ☐ No ☐	Seals intact: Yes	No □	
Packing Material: Bubble Wrap □ Bubble Bags	□ Foam □	Nong ☐ Other ☐	
Thermometer Used: T-266 T-239 Type	ofice: No Blue No		
Cooler Temperature (°C): As-read _/- 7 Corr. Fac	tor CF 0.9 CF +0.3 Correct	ted _ / ? Date and initials of person examining contents:	
Temperature should be above freezing to 6°C		P8/29/17	
Chain of Custody present:	Yes □No □N/A	I.	
Chain of Custody relinquished:	ZYes □No □N/A		
Samples arrived within holding time:	Yes No N/A		
Short Hold Time analyses (<72hr):	Yes No N/A	7/4	
Rush Turn Around Time requested:	□Yes No □N/A		
Sufficient volume:	☑Yes □No □N/A		
Correct containers used:	Øyes □No □N/A		
Pace containers used:	Yes No N/A		
Containers intact:	ZYes □No □N/A		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ☑N/A	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: WT	☐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:			\dashv
Lead acetate strip turns dark? (Record only)	□Yes □No		\dashv
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	? DYes DNo DN/A		
Client Notification/ Resolution: Copy COC	to Client? Y / N	Field Data Required? Y / N	_
Person Contacted: Date/	Time:		
Comments/ Resolution:			
,	_ 24		
At a		1	
Project Manager Review:	Date	: <u>8 29 17</u>	



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 Informatio	on:	Section B Required Proj	ject Infor	mation:		i ë			Section Invoice	on C e Infom	mation														F	Page:	1	of	/	
	R ENERGY	Report To: B	randon	Griffin				1	Attenti	ion.	Jar	ed N	lorris	on					\neg									1		
Address: 818 Kan	sas Ave	Copy To: Ja	ared M	orrison, H	eath Horr	nya			Compa	any Na	me:	WE	STAF	REN	RG	Υ			Ī	REG	ULA	TOR	RY A	GEN	CY					
Topeka,	KS 66612								Addres	SS:		SEE	SEC	OITS	۱A					V	NPD	ES	Γ	GRO	UND	WATE	R Γ	DRINKING	WATER	
	.l.griffin@westarenergy.com	Purchase Ord	ler No.:						Pace Q Referer										\neg	Γ-	UST			RCR	A		П	OTHER		
Phone: (785) 575-81:		Project Name:	JE	CCR Gr	oundwate	er		_	Pace P Manage	roject	He	athe	r Wil	son, 9	913-	563-1	1407			Site	Loc	ation	ī		(S					
Requested Due Date/TAT		Project Numb	er:							Profile #:	96	57, 1							\neg		ST	ATE:	-			- [
															T		Req	uest	ed A	naly	/sis	Filte	red	(Y/N)						
Section D Required Client In	Valid Matrix of	Codes CODE	to left)		COLL	ECTED					Pre	serv	ative	s		2 /2														
SAN	DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL WIPE AIR	OL WP	E (see valid codes to left) (G=GRAB C=COMP)	COMP		COMPOS END/GF	SITE AAB	AT COLLECTION	NERS							Test#	Metals**	Mercury	SO4			0 0				Residual Chlorine (Y/N)			/	
Sample IDs	Z, 0.9 / ,-) OTHER MUST BE UNIQUE TISSUE		MATRIX CODE SAMPLE TYPE		TIME	DATE	TIME	SAMPLE TEMP	# OF CONTAINERS	Unpreserved			NaOH	Methanol		# Analysis Test#	200.8 Total Metals*	245.1 Total Mercury	300.0 CI, FI, SO4	4500 H+B	2540C TDS	Radium 228	יממומווו לידי				Pace	725(9) Project N 3 BP/	o./ Lab I.C	
BAA-	7-082817	١	WT 6			8/28	1155		4		3		_	+	-	-	+		H	\dashv	+	+	+	\vdash	+	+	ibplu	31541	N	OI
2									_	\vdash	+	\vdash	+	+	\dashv	H	+	+	Н	\dashv	+	+	+	++	+	+				-
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4			-	-	-	-		-	\vdash	H	+	+	+	+	\dashv	-	+	+	H	\vdash	\dashv		+			\Box				
5			-	+		-				+	+	+	+	+	\neg	1	+		П		\neg		T	\Box	\top	\Box				
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*200.7 Total Metals: Ba,	Be, B, Ca, Cr, Pb, Li	134	3)	7/u	125tz	1	8/24	6/17	16	00		(D	n	N	PI	40	1	`		8	29/	170) }0	5	.7	7	Y	У	7
**200,8 Total Metals: Co	o, As, Se, Mo, Cd, Sb, Tl											_/						_					+	-						
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age a		•			SAMPI	LER NAME	AND SIGI	UTA	RE																	်	ug QU	Seale Y/N)	Intac (1	
3						PRINT Na	me of SAM	PLER	B	Pan	den	(20	th	5				2022041						_	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	amples Intact	
of 33						SIGNATU	RE of SAM	PLER	/	13	1	16					(MN	E Sig	ned (Y):	08/	128	8/1	7			ř	S	Sin Si	Sar	

Chain of Custody



		r: 60251948	Workorder I	Name:JEC CC		ATER		Ow	ner Re	eceiv	ved	Date:	8/29/201	⁷ Resu	Its Reque	sted By:	9/21/2017
кер	ort To			Subcontra	ct To		dunakan ka		lallallandl				Reques	ed Analys			e alem Birthermann et le
Pac 960 Len	8 Loiret exa, KS	ical Kansas		1638 Suites Greer	Analytical Pittsb Roseytown Roa 2,3, & 4 sburg, PA 1560 (724)850-5600	d 01	line n.v.	served Ci			Radium-228	.226 & Total Radium	 WC)#:3	0228	3602	
ltem	Sample	e ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HN03	SELVEU C	Jirtairje:	2	THE STREET STREET, STR	Radium	302	28602			LAB USE ONLY
1	BAA-7-08	32817	PS	8/28/2017 11:55	60251948001	Water	2				Х	X	1				
2	DUP-082	817	PS	8/28/2017 06:00	60251948002	Water	2				Х	X					
3																	
4																	
5	<u> </u>																
Tran	sfers	Released By		1						Atelorosa Ziese Ag					Comments		
1	131613	· · · · · · · · · · · · · · · · · · ·	A	Date/Time	Received E	у		·····		e/Tim		_					
2			<i>[</i>	628 lb		-	<u> </u>		<u> </u>	<u>اند-</u>	ر کے	০ৎক	0				
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<u> </u>	ner ier	nperature on Rec	ceipt <u>,)(</u> /	₹°C Cus	tody Seal Y	<u>or N</u>		Re	ceive	d on	lce	<u>Y 6</u>	r N		Samples I	ntact Y	ór 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.

Pittsburgh Lab Sa	ample Cond	dition	Upo	on	Red	ceipt			
Pace Analytical Clie	Client Name:		<u> </u>			, K. 3	Project	#	0228
Courier: Fed Ex D UPS USPS Client Commercial Pace Other Label									
Tracking #: 778565963973									n WW
Custody Seal on Cooler/Box P	resent: Dyes		no	Se	als in	tact:	□ no ·		
Thermometer Used	NA	Туре	of Ice	: W	/et	Blue None			
Cooler Temperature Observed Temp — °C Correction Factor: C Final Temp:								- · c	
Temp should be above freezing to 6°	с —		-						
							Date an	nd Initials of pe nts: 714 8	rson examining
Comments:		Yes	No	N/	Ā]				1701
Chain of Custody Present:			<u> </u>	<u> </u>	1.	·			
Chain of Custody Filled Out:		/			2.				<u> </u>
Chain of Custody Relinquished:					3.				
Sampler Name & Signature on COC:				<u> </u>	4.				
Sample Labels match COC:					5.				
-Includes date/time/ID Matrix: i		۲ سر							
Samples Arrived within Hold Time:					6.		L		
Short Hold Time Analysis (<72hr remaining):			_		7				40-
Rush Turn Around Time Requested:			_		8.				
Sufficient Volume:					9.				
Correct Containers Used:					10.				
-Pace Containers Used:		/	Ī						
Containers Intact:		-			11.				
Orthophosphate field filtered					12.				
Hex Cr Aqueous Compliance/NPDES sample field filtered				,,,,,	13.				
Organic Samples checked for dechlorination:					14.				
Filtered volume received for Dissolved tests				سير	15.				
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.					16.		•		
						(HL2			
,						Iwhen 774	Date/time of		
exceptions: VOA, coliform, TOC, O&G, Phenolics						of added	preservation		
					ì	ervative			
Headspace in VOA Vials (>6mm):					17.				
Trip Blank Present:				-	18.				
Trip Blank Custody Seals Present Rad Aqueous Samples Screened > 0.5 mrem/hr									
		-	-	- 1		when leted: 71+	Date: \$1 3	3017.	
Client Notification/ Resolution:							1 2(<u> </u>	
Person Contacted:		Da	ate/T	ime:		Contac	ted By:		
Comments/ Resolution:									
	-						**		
									
					<u>_</u>				
A shook in this have indica	4 41 4 1 - 1:4: -	11-	£ 0, 11	·+i~~	. he-	boon oforced in	aranado		

A check in this box indicates that additional information has been stored 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 2 Groundwater Potentiometric Maps



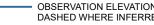
MW-BAA-1WELL NAME AND GROUNDWATER ELEVATION IN FEET1219.84ABOVE MEAN SEA LEVEL (AMSL), AUGUST 2016



MONITORING WELL



PIEZOMETER OBSERVATION ONLY



ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL), DASHED WHERE INFERRED



GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 19 AUGUST 2016.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 19 AUGUST 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019



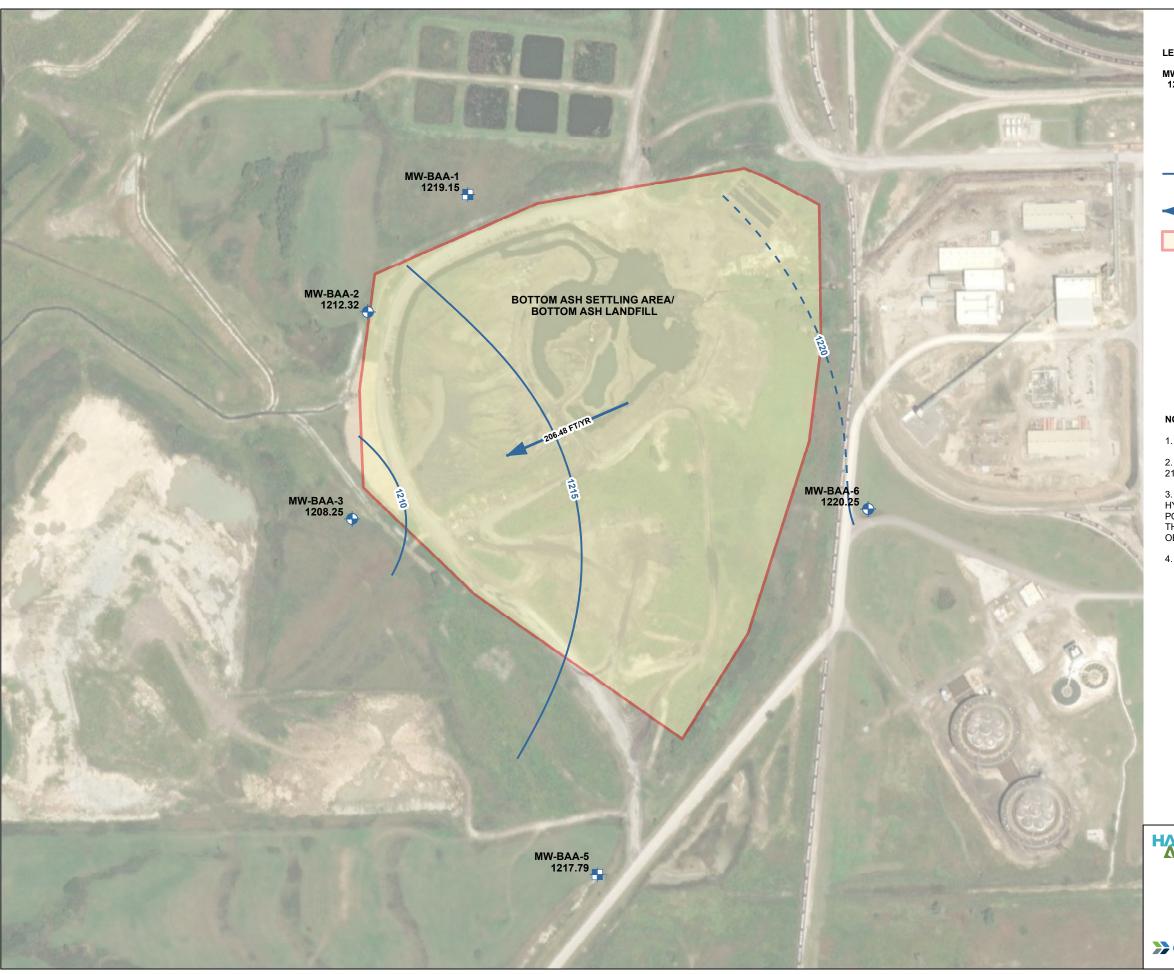




EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** AUGUST 19, 2016





MW-BAA-1WELL NAME AND GROUNDWATER ELEVATION IN FEET1219.84ABOVE MEAN SEA LEVEL (AMSL), SEPTEMBER 2016



MONITORING WELL



PIEZOMETER OBSERVATION ONLY



ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL), DASHED WHERE INFERRED



GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 21 SEPTEMBER 2016.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 21 SEPTEMBER 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019



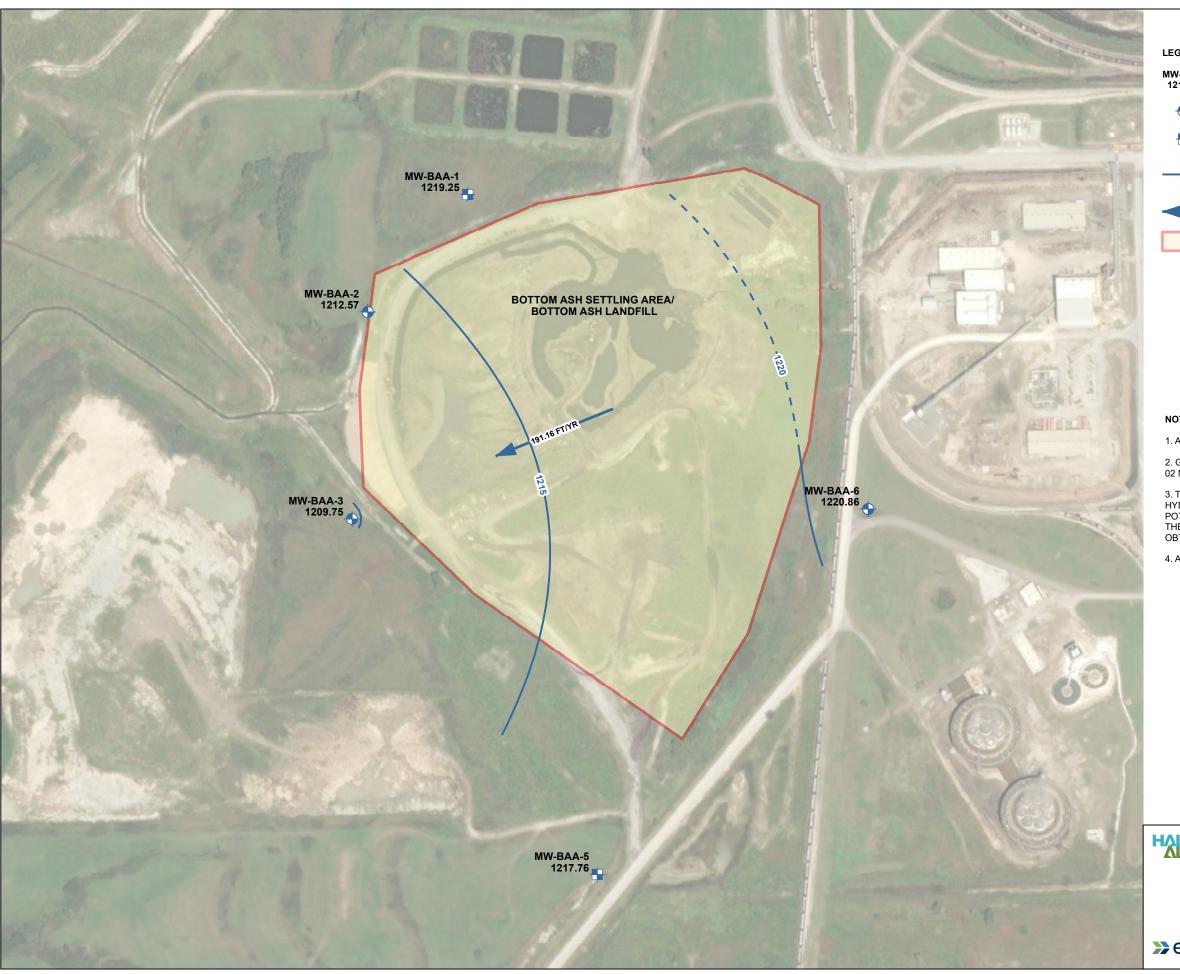




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BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP SEPTEMBER 21, 2016**





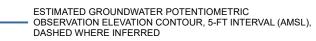
MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), NOVEMBER 2016



MONITORING WELL



PIEZOMETER OBSERVATION ONLY





GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 02 NOVEMBER 2016.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 02 NOVEMBER 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019



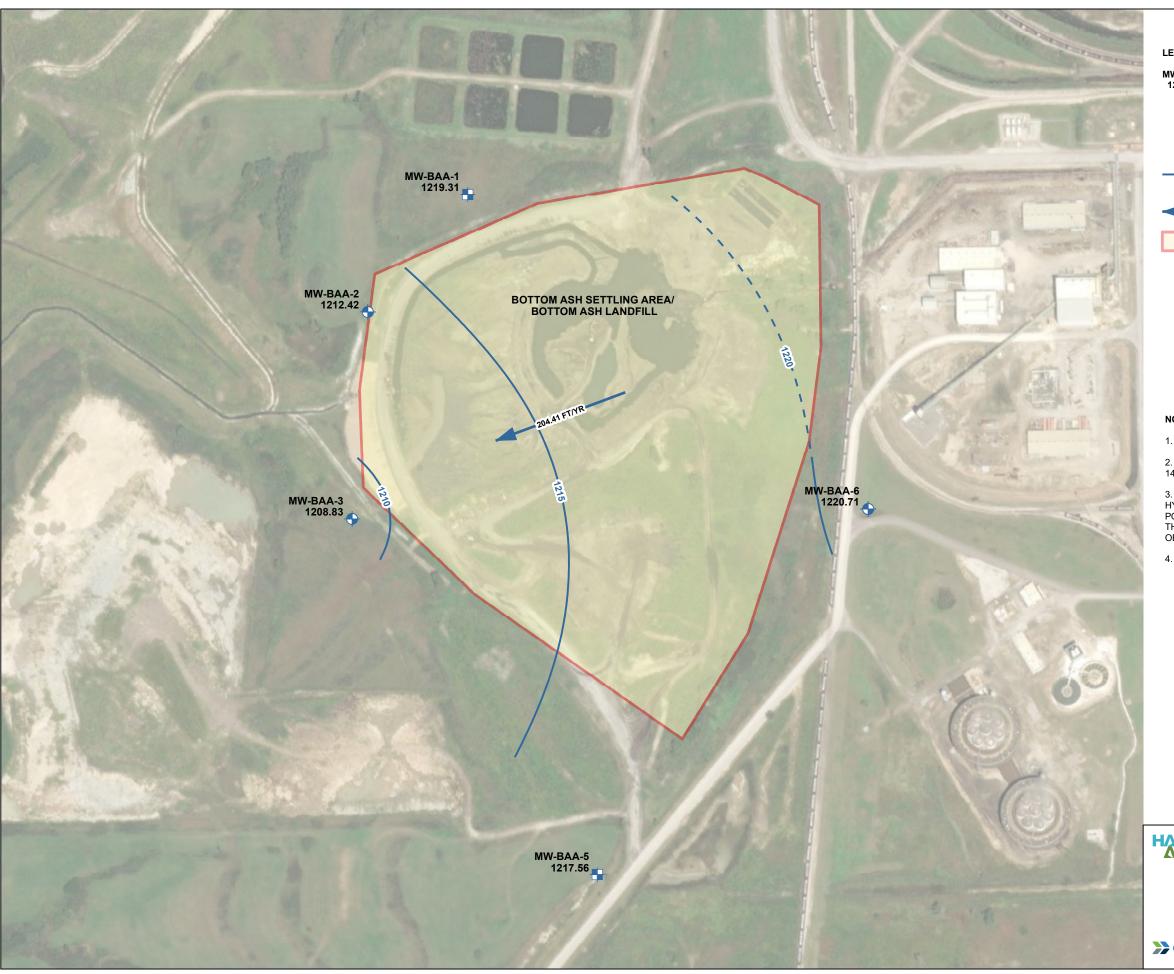




EVERGY KANSAS CENTRAL, INC.
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ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** NOVEMBER 2, 2016





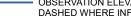
MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), DECEMBER 2016



MONITORING WELL



PIEZOMETER OBSERVATION ONLY



ESTIMATED GROUNDWATER POTENTIOMETRIC

OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL),
DASHED WHERE INFERRED



GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 14 DECEMBER 2016.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 14 DECEMBER 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019







EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP DECEMBER 14, 2016**





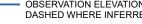
MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), FEBRUARY 2017



MONITORING WELL



PIEZOMETER OBSERVATION ONLY



ESTIMATED GROUNDWATER POTENTIOMETRIC

OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL),
DASHED WHERE INFERRED



GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- $2.\ \mbox{GROUNDWATER}$ POTENTIOMETRIC ELEVATIONS WERE MEASURED 08 FEBRUARY 2017.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 08 FEBRUARY 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019







EVERGY KANSAS CENTRAL, INC.
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ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** FEBRUARY 8, 2017





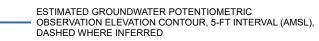
MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), APRIL 2017



MONITORING WELL



PIEZOMETER OBSERVATION ONLY





GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 07 APRIL 2017.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 07 APRIL 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019



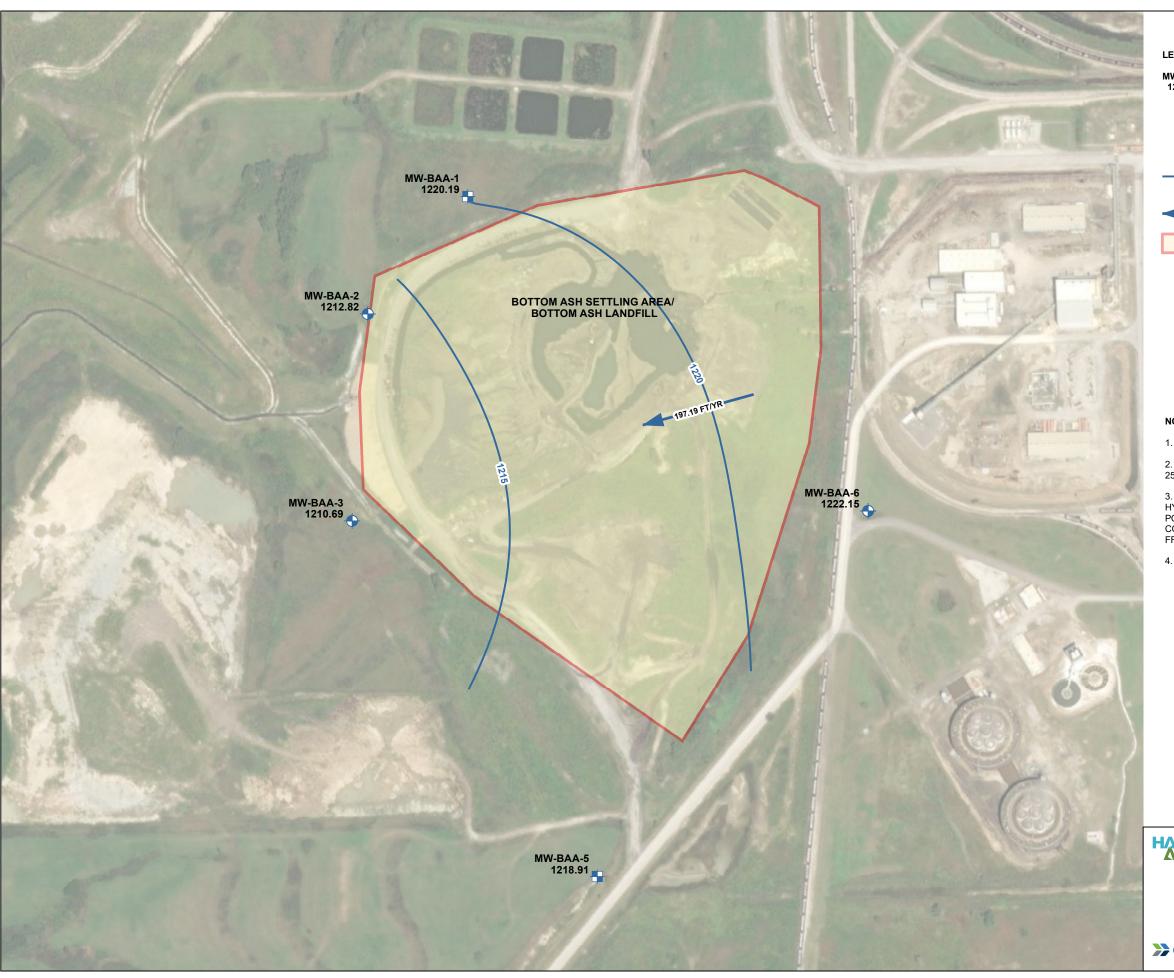




EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** APRIL 7, 2017





MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), MAY 2017



MONITORING WELL



PIEZOMETER OBSERVATION ONLY





GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 25 MAY 2017.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 25 MAY 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019



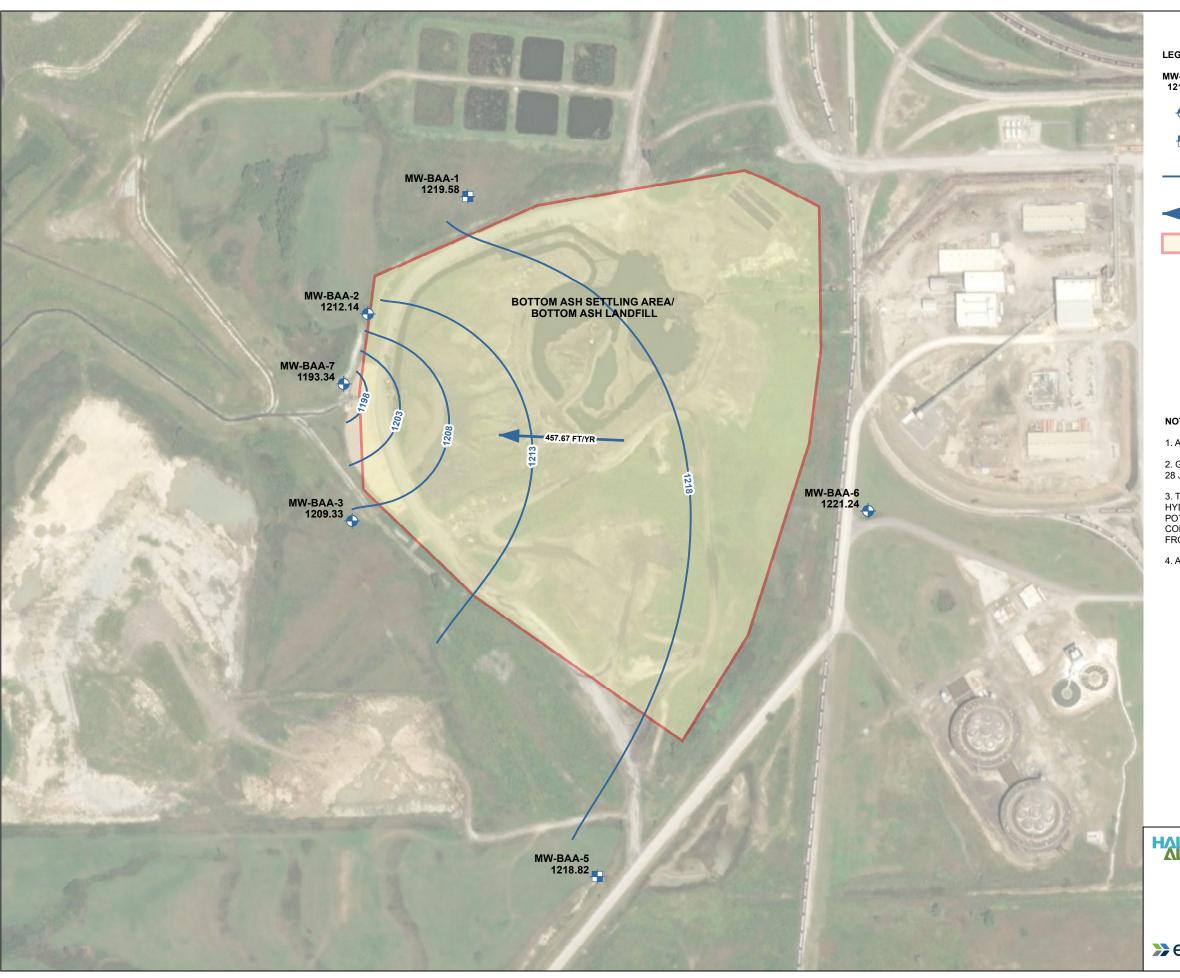




EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** MAY 25, 2017





MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), JUNE 2017



MONITORING WELL



PIEZOMETER OBSERVATION ONLY





GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 28 JUNE 2017.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 28 JUNE 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019



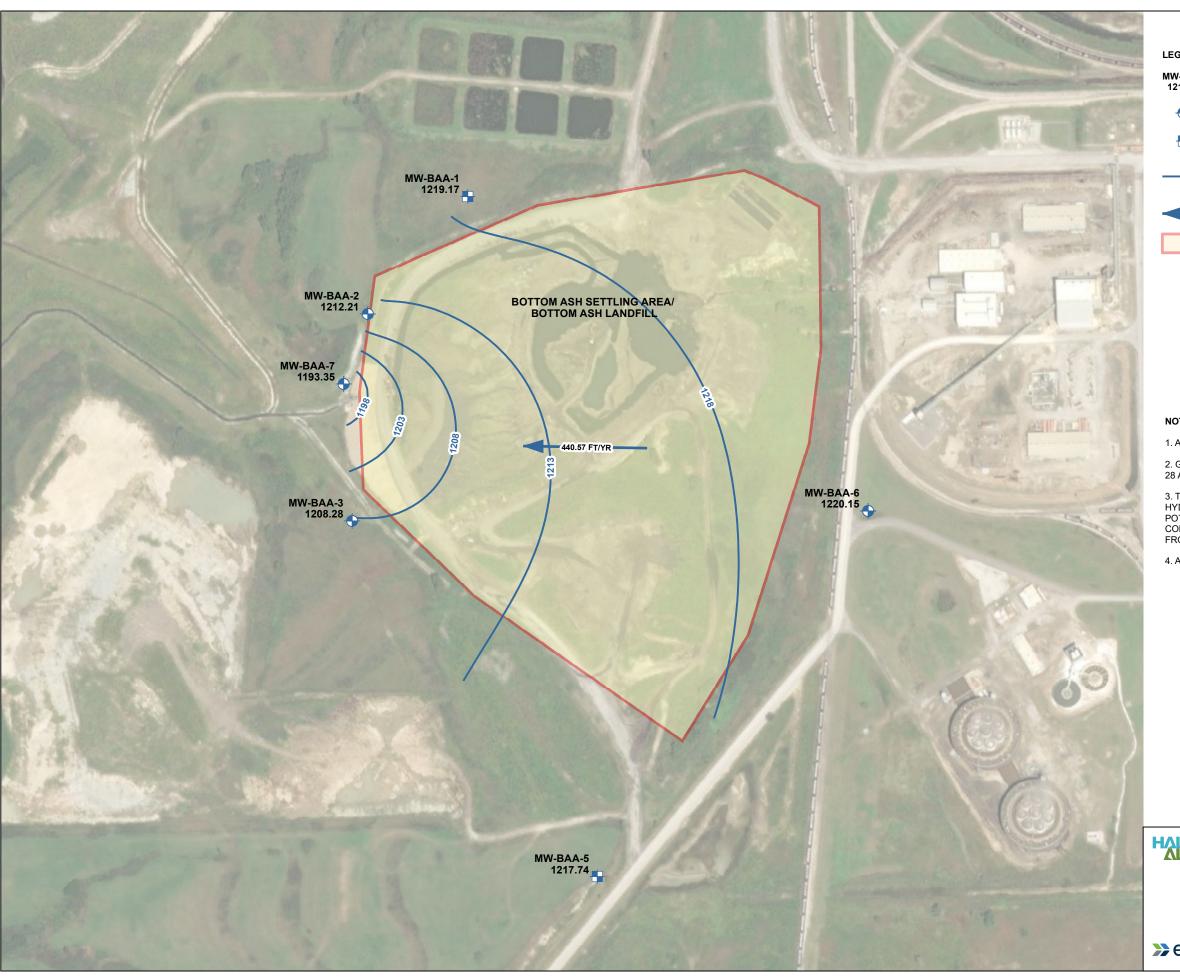




EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** JUNE 28, 2017





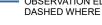
MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), AUGUST 2017



MONITORING WELL



PIEZOMETER OBSERVATION ONLY



ESTIMATED GROUNDWATER POTENTIOMETRIC

OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL),
DASHED WHERE INFERRED



GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)



BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

- 1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 28 AUGUST 2017.
- 3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 28 AUGUST 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
- 4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019







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BOTTOM ASH SETTLING AREA / **BOTTOM ASH LANDFILL** GROUNDWATER POTENTIOMETRIC **ELEVATION CONTOUR MAP** AUGUST 28, 2017

