HALEY ALDRICH

www.haleyaldrich.com

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
322 LANDFILL
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc.)
Topeka, Kansas

File No. 129778-041
January 2020
Revised: March 2021

Table of Contents

Revision No.	Date	Notes
0	January 2020	Original
1	March 2021	Revised to include groundwater potentiometric contour maps for 2019

List of Tables

List of Figures

This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Tecumseh Energy Center (TEC) 322 Landfill consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2019) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2019 Annual Groundwater Monitoring and Corrective Action Report for the TEC 322 Landfill is, to the best of my knowledge, accurate and complete.

Signed:_____
Professional Geologist

Print Name:	Mark Nicholls
Kansas License No.:	Professional Geologist No. 881
Title:	Technical Expert 2
Company:	Haley & Aldrich, Inc.

1. Introduction

This 2019 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the 322 Landfill at the Tecumseh Energy Center (TEC), operated by Evergy Kansas Central, Inc. (Evergy; f/k/a Westar Energy, Inc.). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency Coal Combustion Residual (CCR) Rule (Rule) effective October 19, 2015, including subsequent revisions, specifically Code of Federal Regulations Title 40 (40 CFR), subsection 257.90(e). The Annual Report documents the groundwater monitoring system for the TEC 322 Landfill consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2019) and documents compliance with the Rule. The specific requirements for the annual report listed in § 257.90(e) of the Rule are provided in Section 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

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 257.99, except as provided in paragraph (g) [Suspension of groundwater monitoring requirements] of this section.

Evergy has installed and certified a groundwater monitoring system at the TEC 322 Landfill. The 322 Landfill is subject to the groundwater monitoring and corrective action requirements described under 40 CFR §§ 257.90 through 257.98. This document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e).

2.2 40 CFR § 257.90(e) – SUMMARY

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 describes monitoring completed and actions taken for the groundwater monitoring system at the 322 Landfill as required by the Rule. Groundwater sampling and analysis was conducted in accordance with requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 and § 257.95 is also provided in this report. This Annual Report documents the applicable groundwater-related activities completed in the calendar year 2019.

2.2.1 Status of the Groundwater Monitoring Program

The 322 Landfill remained in the assessment monitoring program during 2019.

2.2.2 Key Actions Completed

The 2018 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2019. Statistical evaluation was completed in January 2019 on analytical data from the September 2018 assessment monitoring sampling event.

A semi-annual assessment monitoring sampling event was completed in March 2019 for detected Appendix IV constituents identified from the June 2018 annual assessment monitoring sampling event. Statistical evaluation was completed in July 2019 on analytical data from the March 2019 assessment monitoring sampling event.

An annual assessment monitoring sampling event was completed in June 2019 to identify detected Appendix IV constituents for subsequent semi-annual sampling events in September 2019 and planned for March 2020. Groundwater protection standards for detected Appendix IV constituents were established or updated at that time. Semi-annual assessment monitoring sampling was completed in September 2019 for detected Appendix IV constituents identified during the June 2019 annual monitoring event. Statistical evaluation of the results from the September 2019 semi-annual assessment monitoring sampling event are due to be completed in January 2020 and will be reported in the next annual report.

2.2.3 Problems Encountered

No noteworthy problems (i.e., problems could include damaged wells, issues with sample collection or lack of sampling, and problems with analytical analysis) were encountered for the 322 Landfill in 2019.

2.2.4 Actions to Resolve Problems

No problems were encountered at the 322 Landfill in 2019; therefore, no actions to resolve problems were required.

2.2.5 Project Key Activities for Upcoming Year

Key activities planned for 2020 include the completion of the 2019 Annual Groundwater Monitoring and Corrective Action Report, statistical evaluation of semi-annual assessment monitoring analytical data collected in September 2019, semi-annual assessment monitoring and subsequent statistical evaluations, and annual assessment monitoring.

2.3 40 CFR § 257.90(e) – INFORMATION

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

2.3.1 40 CFR § 257.90(e)(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 322 Landfill is included in this report as Figure 1.

2.3.2 40 CFR § 257.90(e)(2) – Monitoring System Changes

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;

No monitoring wells were installed or decommissioned during 2019.

2.3.3 40 CFR § 257.90(e)(3) – Summary of Sampling Events

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 § 257.95(b) and § 257.95(d)(1), three independent assessment monitoring samples from each background and downgradient monitoring well were collected in 2019. A summary including sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the 322 Landfill is presented in Table I of this report. Groundwater potentiometric elevation contour maps associated with each groundwater monitoring sampling event in 2019 are provided in Figures 2 through 4.

2.3.4 40 CFR § 257.90(e)(4) – Monitoring Transition Narrative

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

The assessment monitoring program was established in June 2018 to meet the requirements of 40 CFR § 257.95. The 322 Landfill remained in assessment monitoring during 2019.

2.3.5 40 CFR § 257.90(e)(5) – Other Requirements

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

This Annual Report documents activities conducted to comply with §§ 257.90 through 257.95 of the Rule. It is understood that there are supplemental references in §§ 257.90 through 257.98 that must be placed in the Annual Report. The following requirements include relevant and required information in the Annual Report for activities completed in calendar year 2019.

2.3.5.1 40 CFR § 257.94(d)(3) – Demonstration for Alternative Detection Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An alternative groundwater detection monitoring sampling and analysis frequency has not been established for this CCR unit; therefore, no demonstration or certification is applicable.

2.3.5.2 40 CFR § 257.94(e)(2) – Detection Monitoring Alternate Source Demonstration

The owner or operator may demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels to include obtaining a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under this section. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

This unit is in assessment monitoring; therefore, no detection monitoring alternate source demonstration or certification is applicable.

2.3.5.3 40 CFR § 257.95(c)(3) – Demonstration for Alternative Assessment Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An alternative groundwater assessment monitoring sampling and analysis frequency has not been established for this CCR unit; therefore, no demonstration or certification is applicable.

2.3.5.4 40 CFR § 257.95(d)(3) – Assessment Monitoring Concentrations and Groundwater Protection Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An assessment monitoring program has been implemented at the CCR unit since June 2018. Three rounds of assessment monitoring sampling were completed in 2019. Analytical results for both downgradient and upgradient wells are provided in Table I. The background concentrations (upper tolerance limits) and groundwater protection standards established for detected Appendix IV constituents for the 322 Landfill are included in Table II. The background concentrations and groundwater protection standards provided in Table II were utilized for the statistical evaluations completed in 2019 for September 2018 and March 2019 semi-annual assessment monitoring sampling events.

2.3.5.5 40 CFR § 257.95(g)(3)(ii) – Assessment Monitoring Alternate Source Demonstration

Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section and may return to detection monitoring if the constituents in appendices III and IV to this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

No assessment monitoring alternate source demonstration or certification was required in 2019. The 322 Landfill remained in assessment monitoring during 2019.

2.3.5.6 40 CFR § 257.96(a) – Demonstration for Additional Time for Assessment of Corrective Measures

Within 90 days of finding that any constituent listed in appendix IV to this part has been detected at a statistically significant level exceeding the groundwater protection standard defined under § 257.95(h), or immediately upon detection of a release from a CCR unit, the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore affected area to original conditions. The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for no longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or

the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

No assessment monitoring of corrective measures was required to be initiated in 2019; therefore, no demonstration or certification is applicable for this unit.

TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORING
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
322 LANDFILL
TECUMSEH, KANSAS

Location	Upgradient			Downgradient												
	MW-4			MW-1					MW-5			MW-6				
Measure Point (TOC)	936.48			904.65					916.18			911.28				
Sample Name	MW-4-032019	MW-4-062619	MW-4	MW-1-032019	MW-1-062619	DUP-062619	MW-1	DUPLICATE	MW-5-032019	MW-5-062619	MW-5	MW-6-032019	DUP-032019	MW-6-062619	MW-6
Sample Date	3/20/2019	6/26/2019	9/7/2019	3/20/2019	6/26/2019	6/26/2019	9/6/2019	9/6/2019	3/20/2019	6/26/2019	9/7/2019	3/20/2019	3/20/2019	6/26/2019	9/7/2019
Final Lab Report Date	4/1/2019	7/9/2019	9/13/2019	4/1/2019	7/9/2019	7/9/2019	9/13/2019	9/13/2019	4/1/2019	7/9/2019	9/13/2019	4/1/2019	4/1/2019	7/9/2019	9/13/2019
Final Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Radiation Lab Report Date	4/3/2019	7/17/2019	10/2/2019	4/3/2019	7/17/2019	7/17/2019	10/2/2019	10/2/2019	4/3/2019	7/17/2019	10/2/2019	4/3/2019	4/3/2019	7/17/2019	10/2/2019
Final Radiation Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lab Data Reviewed and Accepted	4/15/2019	7/26/2019	10/22/2019	4/15/2019	7/26/2019	7/26/2019	10/22/2019	10/22/2019	4/15/2019	7/26/2019	10/22/2019	4/15/2019	4/15/2019	7/26/2019	10/22/2019
Depth to Water (ft btoc)	3.49	3.28	4.00	3.99	3.84	--	3.83	--	5.70	5.03	6.09	8.06	8.06	8.10	8.09
Temperature (Deg C)	7.78	17.23	19.32	10.35	15.31	--	15.75	--	9.43	15.00	19.63	11.43	11.43	14.34	17.61
Conductivity (µS/cm)	1530	1660	1628	1203	1257	--	992	--	2370	2270	2262	2080	2080	2110	1899
Turbidity (NTU)	4.13	3.00	1.33	9.01	1.75	--	1.61	--	1.46	0.39	0.49	12.1	12.1	8.31	2.19
Boron, Total (mg/L)	<0.10	--	<0.10	**0.12**	--	--	**0.37**	**0.39**	**0.95**	--	**1.5**	**0.72**	**0.71**	--	**0.71**
Calcium, Total (mg/L)	**162**	--	**146**	**162**	--	--	**151**	**154**	**368**	--	**328**	**328**	**322**	--	**295**
Chloride (mg/L)	**280**	--	**266**	**43.6**	--	--	**29.3**	**30.5**	**47.5**	--	**41.9**	**64.9**	**66.4**	--	**66.5**
Fluoride (mg/L)	**0.24**	--	**0.21**	**0.38**	--	--	**0.30**	**0.30**	**0.25**	--	**0.25**	**0.30**	**0.28**	--	**0.28**
Sulfate (mg/L)	**150**	--	**140**	**394**	--	--	**364**	**331**	**1160**	--	**857**	**977**	**532**	--	**783**
pH (su)	**7.2**	--	**7.0**	**7.1**	--	--	**6.9**	**6.8**	**6.9**	--	**6.8**	**7.0**	**7.1**	--	**7.0**
TDS (mg/L)	**976**	--	**987**	**936**	--	--	**905**	**893**	**1980**	--	**1750**	**1750**	**1740**	--	**1600**
Antimony, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--
Arsenic (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--
Barium, Total (mg/L)	**0.094**	**0.11**	**0.10**	**0.066**	**0.065**	**0.069**	**0.076**	**0.079**	**0.018**	**0.022**	**0.019**	**0.016**	**0.017**	**0.016**	**0.014**
Beryllium, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--
Cadmium, Total (mg/L)	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050	--	--	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050	--
Chromium, Total (mg/L)	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	--	--	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	--
Cobalt, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	**0.0011**	<0.0010	**0.0017**	**0.0017**	**0.0014**	**0.0019**	**0.0020**	**0.0022**	**0.0021**	**0.0026**	**0.0024**
Lead, Total (mg/L)	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	--	<0.010	<0.010	--	<0.010	<0.010	<0.010	--
Lithium, Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.015**	**0.017**	**0.010**	<0.010	**0.012**	**0.015**
Molybdenum, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--
Selenium, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	--	<0.0050	<0.0010	--	<0.0050	<0.0050	<0.0010	--
Thallium, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--
Mercury, Total (mg/L)	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	--	--	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	--
Fluoride (mg/L)	**0.24**	**0.24**	**0.21**	**0.38**	**0.34**	**0.35**	**0.30**	**0.30**	**0.25**	<0.20	**0.25**	**0.30**	**0.28**	**0.46**	**0.28**
Radium-226 & 228 Combined (pCi/L)	**1.85 +/- 1.11 (1.73)**	**1.84 +/- 1.01 (1.59)**	**1.80 +/- 0.970 (1.29)**	0.253 +/- 0.818 (1.75)	0.725 +/- 0.817 (1.54)	**1.67 +/- 1.10 (1.61)**	1.72 +/- 1.09 (1.74)	0.808 +/- 0.806 (1.52)	1.36 +/- 1.01 (1.66)	1.04 +/- 0.936 (1.59)	1.01 +/- 0.845 (1.40)	0.931 +/- 0.876 (1.55)	**1.43 +/- 0.873 (1.41)**	**2.60 +/- 1.23 (1.47)**	0.0676 +/- 0.759 (1.54)

Notes:

The June 2019 sampling event was for Appendix IV constituents only. The September 2019 sampling event included Appendix IV constituents detected in the June 2019 sampling event, and all of the Appendix III constituents.

Radiological results are presented as activity plus or minus uncertainty with minimum detectable concentration (MDC).

Bold value: *Detection above laboratory reporting limit or MDC.*

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE II
ANNUAL ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS
JUNE 2019 SAMPLING EVENT
TECUMSEH ENERGY CENTER
322 LANDFILL

Well #	Background Value*	GWPS
CCR Appendix-IV Barium, Total (mg/L)		
MW-4 (upgradient)	0.14	NA
MW-1		2
MW-5		2
MW-6		2
CCR Appendix-IV Cobalt, Total (mg/L)		
MW-4 (upgradient)	0.001	NA
MW-1		0.006
MW-5		0.006
MW-6		0.006
CCR Appendix-IV Fluoride, Total (mg/L)		
MW-4 (upgradient)	0.35	NA
MW-1		4.0
MW-5		4.0
MW-6		4.0
CCR Appendix-IV Lithium, Total (mg/L)		
MW-4 (upgradient)	0.01	NA
MW-1		0.040
MW-5		0.040
MW-6		0.040
CCR Appendix-IV Radium-226 & 228 Combined (pCi/L)		
MW-4 (upgradient)	3.1	NA
MW-1		5
MW-5		5
MW-6		5

Notes:

** Background value based on data collected through June 2018*
CCR = Coal Combustion Residuals
GWPS = Groundwater Protection Standard
MCL = Maximum Contaminant Level
mg/L = milligrams per Liter
NA = Not Applicable
pCi/L = picoCuries per Liter
RSL = Regional Screening Level

FIGURES

LEGEND

- MONITORING WELL
- PIEZOMETRIC OBSERVATION ONLY
- 322 LANDFILL

NOTE

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. AERIAL IMAGERY SOURCE: ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, 11 APRIL 2017.

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL MONITORING WELL LOCATION MAP

MARCH 2021
SCALE: AS SHOWN

FIGURE 1

LEGEND

- **MW-1 900.47** — WELL NAME AND GROUNDWATER ELEVATION (MARCH 20, 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 20 MARCH 2019. MW-2 GROUNDWATER ELEVATION WAS NOT MEASURED IN MARCH 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 20, 2019

evergy

MARCH 2021

FIGURE 2

LEGEND

- MW-1 900.47 — WELL NAME AND GROUNDWATER ELEVATION (JUNE 26, 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 26 JUNE 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 26, 2019

evergy

MARCH 2021

FIGURE 3

LEGEND

- **MW-1 900.47** — WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 06, 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 06 SEPTEMBER 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 06, 2019

evergy

MARCH 2021

FIGURE 4

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

March 18, 2022
Project No. 0204993-000

TO: Evergy Kansas Central, Inc.
Jared Morrison – Director, Water and Waste Programs

Mark Nicholls

Digitally signed by Mark Nicholls
Date: 2022.03.18 13:12:30 -07'00'

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Principal Consultant – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: 2019 Annual Groundwater Monitoring and Corrective Action Report Addendum
Evergy Kansas Central, Inc. (Evergy)
322 Landfill
Tecumseh Energy Center – Tecumseh, Kansas

The 322 Landfill at the Evergy Tecumseh Energy Center (TEC) 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 2019 for the 322 Landfill was completed and placed in the facility's operating record on January 31, 2020, 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 2019 sampling events are included in Attachment 1, and a discussion of the applicable statistical analyses completed in 2019 are included in Attachment 2 of this addendum. Revision 1 of the 2019 GWMCA Report does include a "Groundwater Potentiometric Elevation Contour Map" for each of the 2019 sampling events as

Figures 2, 3, and 4. In those figures, the measured groundwater elevations for each well are listed. Those maps have been duplicated in this addendum and were modified to include the calculated groundwater flow rate and direction.

The attachments to this addendum are as follows providing the additional information:

- 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 sampling events completed in March, June, and September 2019 are provided.
- Attachment 2 – Statistical Analyses: Includes a discussion of the statistical analyses utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against Groundwater Protection Standards), and supporting backup for statistical analyses completed in 2019. Statistical analyses completed in 2019 included:
  - January 2019 statistical analyses for data obtained in the September 2018 sampling event; and
  - July 2019 statistical analyses for data obtained in the March 2019 sampling event.
- Attachment 3 – Revised 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 March, June, and September 2019 are provided.

ATTACHMENT 1

Laboratory Analytical Reports

ATTACHMENT 1-1

March 2019 Sampling Event Laboratory Analytical Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

April 01, 2019

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

RE: Project: TEC LF CCR
Pace Project No.: 60297582

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2019. 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
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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC LF CCR
Pace Project No.: 60297582

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TEC LF CCR
Pace Project No.: 60297582

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60297582001	**MW-4-032019**	Water	03/20/19 09:32	03/21/19 17:00
60297582002	**MW-5-032019**	Water	03/20/19 10:42	03/21/19 17:00
60297582003	**MW-6-032019**	Water	03/20/19 13:07	03/21/19 17:00
60297582004	**MW-1-032019**	Water	03/20/19 14:40	03/21/19 17:00
60297582005	**DUP-032019**	Water	03/20/19 06:00	03/21/19 17:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC LF CCR
Pace Project No.: 60297582

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60297582001	**MW-4-032019**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582002	**MW-5-032019**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582003	**MW-6-032019**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582004	**MW-1-032019**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582005	**DUP-032019**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60297582

Sample: MW-4-032019 **Lab ID: 60297582001** Collected: 03/20/19 09:32 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.094**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:17	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:17	7440-41-7	
Boron, Total Recoverable	**<0.10**	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:17	7440-42-8	
Calcium, Total Recoverable	**162**	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:17	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:17	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:17	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:17	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:50	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 11:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**976**	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		03/25/19 11:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**280**	mg/L	20.0	20		03/28/19 22:58	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	1		03/28/19 22:46	16984-48-8	
Sulfate	**150**	mg/L	20.0	20		03/28/19 22:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60297582

Sample: MW-5-032019 **Lab ID: 60297582002** Collected: 03/20/19 10:42 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.018**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:20	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:20	7440-41-7	
Boron, Total Recoverable	**0.95**	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:20	7440-42-8	
Calcium, Total Recoverable	**368**	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:20	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:20	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:20	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:20	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:53	7440-43-9	
Cobalt, Total Recoverable	**0.0014**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7439-98-7	
Selenium, Total Recoverable	**<0.0050**	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:36	7782-49-2	D3
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1980**	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		03/25/19 11:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**47.5**	mg/L	10.0	10		03/29/19 16:57	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		03/28/19 23:24	16984-48-8	
Sulfate	**1160**	mg/L	100	100		03/28/19 23:50	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60297582

Sample: MW-6-032019 **Lab ID: 60297582003** Collected: 03/20/19 13:07 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.016**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:22	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:22	7440-41-7	
Boron, Total Recoverable	**0.72**	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:22	7440-42-8	
Calcium, Total Recoverable	**328**	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:22	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:22	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:22	7439-92-1	
Lithium	**0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:22	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:56	7440-43-9	
Cobalt, Total Recoverable	**0.0022**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7439-98-7	
Selenium, Total Recoverable	**<0.0050**	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:38	7782-49-2	D3
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1750**	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		03/25/19 11:18		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**64.9**	mg/L	20.0	20		03/29/19 00:16	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	1		03/29/19 00:03	16984-48-8	
Sulfate	**977**	mg/L	100	100		03/29/19 00:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60297582

Sample: MW-1-032019 **Lab ID: 60297582004** Collected: 03/20/19 14:40 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.066**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:24	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:24	7440-41-7	
Boron, Total Recoverable	**0.12**	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:24	7440-42-8	
Calcium, Total Recoverable	**162**	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:24	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:24	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:24	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:24	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:59	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**936**	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		03/25/19 11:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**43.6**	mg/L	10.0	10		03/29/19 17:10	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	1		03/29/19 01:07	16984-48-8	
Sulfate	**394**	mg/L	100	100		03/29/19 01:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60297582

Sample: DUP-032019 **Lab ID: 60297582005** Collected: 03/20/19 06:00 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.017**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:27	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:27	7440-41-7	
Boron, Total Recoverable	**0.71**	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:27	7440-42-8	
Calcium, Total Recoverable	**322**	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:27	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:27	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:27	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:27	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:19	7440-43-9	
Cobalt, Total Recoverable	**0.0021**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7439-98-7	
Selenium, Total Recoverable	**<0.0050**	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:40	7782-49-2	D3
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1740**	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		03/25/19 08:29		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.4**	mg/L	20.0	20		03/29/19 08:12	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	1		03/29/19 07:59	16984-48-8	
Sulfate	**532**	mg/L	100	100		03/29/19 08:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 575586 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

METHOD BLANK: 2361248 Matrix: Water
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	03/28/19 10:59	

LABORATORY CONTROL SAMPLE: 2361249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0045	90	85-115	

MATRIX SPIKE SAMPLE: 2361250

Parameter	Units	60297581003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	0.005	0.0046	92	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2361251 2361252

Parameter	Units	60297657001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.005	0.005	0.0050	0.0050	101	99	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 575351 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

METHOD BLANK: 2360336 Matrix: Water
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	03/26/19 13:05	
Beryllium	mg/L	<0.0010	0.0010	03/26/19 13:05	
Boron	mg/L	<0.10	0.10	03/26/19 13:05	
Calcium	mg/L	<0.20	0.20	03/26/19 13:05	
Chromium	mg/L	<0.0050	0.0050	03/26/19 13:05	
Lead	mg/L	<0.010	0.010	03/26/19 13:05	
Lithium	mg/L	<0.010	0.010	03/26/19 13:05	

LABORATORY CONTROL SAMPLE: 2360337

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.98	98	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	0.97	97	85-115	
Lead	mg/L	1	0.99	99	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2360338 2360339

Parameter	Units	60297581003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.54	1	1	1.6	1.5	101	100	70-130	0	20	
Beryllium	mg/L	<0.0010	1	1	0.99	1.0	99	100	70-130	0	20	
Boron	mg/L	0.48	1	1	1.5	1.5	101	103	70-130	1	20	
Calcium	mg/L	206	10	10	221	219	154	134	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.96	0.97	96	97	70-130	1	20	
Lead	mg/L	<0.010	1	1	0.96	0.97	96	97	70-130	0	20	
Lithium	mg/L	0.021	1	1	1.0	1.0	102	102	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 575368 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

METHOD BLANK: 2360396 Matrix: Water
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	03/28/19 13:00	
Arsenic	mg/L	<0.0010	0.0010	03/28/19 13:00	
Cadmium	mg/L	<0.00050	0.00050	03/28/19 13:00	
Cobalt	mg/L	<0.0010	0.0010	03/28/19 13:00	
Molybdenum	mg/L	<0.0010	0.0010	03/28/19 13:00	
Selenium	mg/L	<0.0010	0.0010	03/28/19 13:00	
Thallium	mg/L	<0.0010	0.0010	03/28/19 13:00	

LABORATORY CONTROL SAMPLE: 2360397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.038	95	85-115	
Arsenic	mg/L	0.04	0.039	97	85-115	
Cadmium	mg/L	0.04	0.039	96	85-115	
Cobalt	mg/L	0.04	0.039	97	85-115	
Molybdenum	mg/L	0.04	0.035	88	85-115	
Selenium	mg/L	0.04	0.039	99	85-115	
Thallium	mg/L	0.04	0.036	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2360398 2360399

Parameter	Units	60297581002 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	0.04	0.04	0.037	0.038	93	94	70-130	1	20	
Arsenic	mg/L	0.028	0.04	0.04	0.066	0.066	95	95	70-130	0	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.035	0.035	88	89	70-130	0	20	
Cobalt	mg/L	0.0014	0.04	0.04	0.040	0.040	96	96	70-130	0	20	
Molybdenum	mg/L	0.0029	0.04	0.04	0.040	0.040	92	92	70-130	0	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.033	0.033	81	81	70-130	0	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.038	0.038	94	95	70-130	1	20	

MATRIX SPIKE SAMPLE: 2360400

Parameter	Units	60297582005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.037	92	70-130	
Arsenic	mg/L	<0.0010	0.04	0.039	96	70-130	
Cadmium	mg/L	<0.00050	0.04	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

MATRIX SPIKE SAMPLE: 2360400

Parameter	Units	60297582005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0021	0.04	0.042	99	70-130	
Molybdenum	mg/L	<0.0010	0.04	0.037	90	70-130	
Selenium	mg/L	<0.0050	0.04	0.037	93	70-130	
Thallium	mg/L	<0.0010	0.04	0.038	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 575163 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

METHOD BLANK: 2359343 Matrix: Water
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/22/19 15:40	

LABORATORY CONTROL SAMPLE: 2359344

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	986	99	80-120	

SAMPLE DUPLICATE: 2359345

Parameter	Units	60297582001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	976	941	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 575161
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60297582005

SAMPLE DUPLICATE: 2359338

Parameter	Units	60297249001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.4	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 575267 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004

SAMPLE DUPLICATE: 2360124

Parameter	Units	60297253001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.9	1	5	H6

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 576049 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

METHOD BLANK: 2363299 Matrix: Water
Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/28/19 14:16	
Fluoride	mg/L	<0.20	0.20	03/28/19 14:16	
Sulfate	mg/L	<1.0	1.0	03/28/19 14:16	

LABORATORY CONTROL SAMPLE: 2363300

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	5.3	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2363301 2363302

Parameter	Units	60296837001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	199000	100000	100000	291000	286000	92	87	90-110	2	15	M1
Fluoride	mg/L	ND	50000	50000	51400	52500	100	103	90-110	2	15	
Sulfate	mg/L	ND	100000	100000	107000	107000	102	102	90-110	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60297582

QC Batch: 576262 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60297582002, 60297582004

METHOD BLANK: 2364278 Matrix: Water
Associated Lab Samples: 60297582002, 60297582004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/29/19 12:14	

LABORATORY CONTROL SAMPLE: 2364279

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	103	90-110	

MATRIX SPIKE SAMPLE: 2364282

Parameter	Units	60297582004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	43.6	50	92.5	98	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC LF CCR
Pace Project No.: 60297582

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

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

ANALYTE QUALIFIERS

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.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC LF CCR
Pace Project No.: 60297582

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60297582001	**MW-4-032019**	EPA 200.7	575351	EPA 200.7	575421
60297582002	**MW-5-032019**	EPA 200.7	575351	EPA 200.7	575421
60297582003	**MW-6-032019**	EPA 200.7	575351	EPA 200.7	575421
60297582004	**MW-1-032019**	EPA 200.7	575351	EPA 200.7	575421
60297582005	**DUP-032019**	EPA 200.7	575351	EPA 200.7	575421
60297582001	**MW-4-032019**	EPA 200.8	575368	EPA 200.8	575517
60297582002	**MW-5-032019**	EPA 200.8	575368	EPA 200.8	575517
60297582003	**MW-6-032019**	EPA 200.8	575368	EPA 200.8	575517
60297582004	**MW-1-032019**	EPA 200.8	575368	EPA 200.8	575517
60297582005	**DUP-032019**	EPA 200.8	575368	EPA 200.8	575517
60297582001	**MW-4-032019**	EPA 245.1	575586	EPA 245.1	575627
60297582002	**MW-5-032019**	EPA 245.1	575586	EPA 245.1	575627
60297582003	**MW-6-032019**	EPA 245.1	575586	EPA 245.1	575627
60297582004	**MW-1-032019**	EPA 245.1	575586	EPA 245.1	575627
60297582005	**DUP-032019**	EPA 245.1	575586	EPA 245.1	575627
60297582001	**MW-4-032019**	SM 2540C	575163		
60297582002	**MW-5-032019**	SM 2540C	575163		
60297582003	**MW-6-032019**	SM 2540C	575163		
60297582004	**MW-1-032019**	SM 2540C	575163		
60297582005	**DUP-032019**	SM 2540C	575163		
60297582001	**MW-4-032019**	SM 4500-H+B	575267		
60297582002	**MW-5-032019**	SM 4500-H+B	575267		
60297582003	**MW-6-032019**	SM 4500-H+B	575267		
60297582004	**MW-1-032019**	SM 4500-H+B	575267		
60297582005	**DUP-032019**	SM 4500-H+B	575161		
60297582001	**MW-4-032019**	EPA 300.0	576049		
60297582002	**MW-5-032019**	EPA 300.0	576049		
60297582002	**MW-5-032019**	EPA 300.0	576262		
60297582003	**MW-6-032019**	EPA 300.0	576049		
60297582004	**MW-1-032019**	EPA 300.0	576049		
60297582004	**MW-1-032019**	EPA 300.0	576262		
60297582005	**DUP-032019**	EPA 300.0	576049		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60297582

60297582

Client Name: Westar Energy

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ 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: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T-296 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.4 **Corr. Factor** -1.0 **Corrected** 0.4

Date and initials of person examining contents: PU 3/21/19

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:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
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: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	7 DAY

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC_0000007956
Project Name:	TEC LF CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300: Cl, F SO4	4500 H+B	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-4-032019	WT	G			3/20	0932		2	1		1														60297582 BPIU BPIN 60297582 001
2	MW-5-032019	WT	G			3/20	1042		2	1		1														BPIU BPIN 002
3	MW-6-032019	WT	G			3/20	1307		2	1		1														003
4	MW-1-032019	WT	G			3/20	1446		2	1		1														004
5																										
6																										
7																										
8																										
9																										
10	DUP-032019	WT	G			3/20	0600		2	1		1														BPIU BPIN 005
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca,Ba, Be, Cr, Pb, Li	Westar	3/21	0800		3/21/19	1700	0.4	X	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 03/20/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Container Order #468041

Order By :		Ship To :		Return To:	
Company	WESTAR ENERGY	Company	WESTAR ENERGY	Company	Pace Analytical Kansas
Contact	Griffin, Brandon	Contact	Griffin, Brandon	Contact	Wilson, Heather
Email	brandon.l.griffin@westarenergy.	Email	brandon.l.griffin@westarenergy.	Email	heather.wilson@pacelabs.com
Address	818 S. Kansas Ave	Address	818 S. Kansas Ave	Address	9608 Loiret Blvd.
Address 2		Address 2		Address 2	
City	Topeka	City	Topeka	City	Lenexa
State	KS Zip 66612	State	KS Zip 66612	State	KS Zip 66219
Phone	785-575-8135	Phone	785-575-8135	Phone	1(913)563-1407

Info

Project Name	TEC LF CCR- App III & IV	**Due Date**	02/27/2019	**Profile**	9657, 2	**Quote**	
Project	Wilson, Heather	**Return**		**Carrier**	Most Economical	**Locatio**	KS

Trip Blanks

- [ ] Include Trip Blanks

Bottle

- [ ] Blank
- [x] Pre-Printed No Sample IDs
- [ ] Pre-Printed With Sample IDs

- [ ] Boxed Cases
- [ ] Individually Wrapped
- [ ] Grouped By Sample

Return Shipping

- [x] No Shipper
- [ ] With Shipper

COC Options

- [ ] Number of Blanks
- [x] Pre-Printed 1

Misc

- [ ] Sampling Instructions
- [x] Custody Seal
- [x] Temp. Blanks
- [x] Coolers
- [ ] Syringes

- [ ] Extra Bubble Wrap
- [ ] Short Hold/Rush
- [ ] DI Liter(s)
- [ ] USDA Regulated Soils

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
5	WT	Metals	1-1L plastic w/HNO3	5	0	010719-2AJN	
5	WT	300.0 Anions/pH/TDS	1L plastic unpreserved	5	0	010719-2APJ	

Hazard Shipping Placard In Place : NO

*Sample receiving hours are Mon-Fri 7:00am-6:00pm and Sat 8:00am-2:00pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.
*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage and disposal.
*Payment term are net 30 days.
*Please include the proposal number on the chain of custody to insure proper billing.

Sample

PP COC (1), PP labels w/o sample IDs
Lenexa return
Scott to take on 2/28/19

Ship Date :	02/27/2019
Prepared	Ben
Verified By:	

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

April 03, 2019

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

RE: Project: TEC LF CCR
Pace Project No.: 60297616

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on March 22, 2019. 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
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Andrew Hare, Westar Energy
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC LF CCR
Pace Project No.: 60297616

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
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 #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TEC LF CCR
Pace Project No.: 60297616

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60297616001	**MW-4-032019**	Water	03/20/19 09:32	03/22/19 09:30
60297616002	**MW-5-032019**	Water	03/20/19 10:42	03/22/19 09:30
60297616003	**MW-6-032019**	Water	03/20/19 13:07	03/22/19 09:30
60297616004	**MW-1-032019**	Water	03/20/19 14:40	03/22/19 09:30
60297616005	**DUP-032019**	Water	03/20/19 14:40	03/22/19 09:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC LF CCR
Pace Project No.: 60297616

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60297616001	**MW-4-032019**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616002	**MW-5-032019**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616003	**MW-6-032019**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616004	**MW-1-032019**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616005	**DUP-032019**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60297616

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: April 03, 2019

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.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60297616

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: April 03, 2019

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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60297616

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: April 03, 2019

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.

Additional Comments:

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

Sample: MW-4-032019 **Lab ID: 60297616001** Collected: 03/20/19 09:32 Received: 03/22/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0768 ± 0.567 (1.08) C:NA T:88%**	pCi/L	04/02/19 11:44	13982-63-3	
Radium-228	EPA 904.0	**1.77 ± 0.544 (0.652) C:73% T:85%**	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.85 ± 1.11 (1.73)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

Sample: MW-5-032019 **Lab ID: 60297616002** Collected: 03/20/19 10:42 Received: 03/22/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.405 ± 0.581 (0.951) C:NA T:98%**	pCi/L	04/02/19 11:54	13982-63-3	
Radium-228	EPA 904.0	**0.953 ± 0.429 (0.711) C:74% T:86%**	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.36 ± 1.01 (1.66)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

Sample: MW-6-032019 **Lab ID: 60297616003** Collected: 03/20/19 13:07 Received: 03/22/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.269 ± 0.484 (0.828) C:NA T:99%**	pCi/L	04/02/19 12:11	13982-63-3	
Radium-228	EPA 904.0	**0.662 ± 0.392 (0.718) C:69% T:85%**	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.931 ± 0.876 (1.55)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

Sample: MW-1-032019 **Lab ID: 60297616004** Collected: 03/20/19 14:40 Received: 03/22/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.151 ± 0.495 (1.06) C:NA T:86%**	pCi/L	04/02/19 12:11	13982-63-3	
Radium-228	EPA 904.0	**0.253 ± 0.323 (0.685) C:71% T:83%**	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.253 ± 0.818 (1.75)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

Sample: DUP-032019 **Lab ID: 60297616005** Collected: 03/20/19 14:40 Received: 03/22/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.285 ± 0.383 (0.615) C:NA T:96%**	pCi/L	04/02/19 12:11	13982-63-3	
Radium-228	EPA 904.0	**1.14 ± 0.490 (0.795) C:74% T:79%**	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.43 ± 0.873 (1.41)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

QC Batch: 335730 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60297616001, 60297616002, 60297616003, 60297616004, 60297616005

METHOD BLANK: 1633600 Matrix: Water
Associated Lab Samples: 60297616001, 60297616002, 60297616003, 60297616004, 60297616005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.151 ± 0.414 (0.925) C:76% T:69%	pCi/L	04/02/19 11:21	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60297616

QC Batch: 335729 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60297616001, 60297616002, 60297616003, 60297616004, 60297616005

METHOD BLANK: 1633599 Matrix: Water
Associated Lab Samples: 60297616001, 60297616002, 60297616003, 60297616004, 60297616005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.506 ± 0.472 (0.661) C:NA T:98%	pCi/L	04/02/19 10:37	

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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC LF CCR
Pace Project No.: 60297616

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC LF CCR
Pace Project No.: 60297616

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60297616001	**MW-4-032019**	EPA 903.1	335729		
60297616002	**MW-5-032019**	EPA 903.1	335729		
60297616003	**MW-6-032019**	EPA 903.1	335729		
60297616004	**MW-1-032019**	EPA 903.1	335729		
60297616005	**DUP-032019**	EPA 903.1	335729		
60297616001	**MW-4-032019**	EPA 904.0	335730		
60297616002	**MW-5-032019**	EPA 904.0	335730		
60297616003	**MW-6-032019**	EPA 904.0	335730		
60297616004	**MW-1-032019**	EPA 904.0	335730		
60297616005	**DUP-032019**	EPA 904.0	335730		
60297616001	**MW-4-032019**	Total Radium Calculation	336842		
60297616002	**MW-5-032019**	Total Radium Calculation	336842		
60297616003	**MW-6-032019**	Total Radium Calculation	336842		
60297616004	**MW-1-032019**	Total Radium Calculation	336842		
60297616005	**DUP-032019**	Total Radium Calculation	336842		

Chain of Custody

Pace Analytical®
www.pacelabs.com

[x] Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS
Cert. Needed: [ ] Yes [x] No
Owner Received Date: 3/22/2019 Results Requested By: 4/5/2019

Workorder: 60297616 **Workorder Name:** TEC LF CCR

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30285863

30285863

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Radium-226 & Total Radium	Requested Analysis: Radium-228	LAB USE ONLY
1	MW-4-032019	PS	3/20/2019 09:32	60297616001	Water	1	X	X	001
2	MW-5-032019	PS	3/20/2019 10:42	60297616002	Water	1	X	X	002
3	MW-6-032019	PS	3/20/2019 13:07	60297616003	Water	1	X	X	003
4	MW-1-032019	PS	3/20/2019 14:40	60297616004	Water	1	X	X	004
5	DUP-032019	PS	3/20/2019 14:40	60297616005	Water	1	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	3-22-19
2			ET 3-25-19	
3				

Comments: 0930

Cooler Temperature on Receipt 0.4 °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.*

Pace Analytical
www.pacelabs.com

RUSH

CHAIN-OF-CUSTODY / Analytical Request Document

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

30285863

Page: 1 of 1

Section A — Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	~~15 Day~~ 4/12/19

Section B — Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC LF CCR
Project Number:	

Section C — Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Section D — Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-4-032019	WT	G			3/20	0932		2			2											
2	MW-5-032019	WT	G			3/20	1042		2			2											
3	MW-6-032019	WT	G			3/20	1307		2			2											
4	MW-1-032019	WT	G			3/20	1440		2			2											
5																							
6																							
7																							
8																							
9																							
10	DUP-032019	WT	G			3/20	0600		2			2											
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	MJ / Westar	3/21/19	0		3/22/19	0930	0.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 03/20/19

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Westar Energy Project # 30285863

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 4746 8742 5304

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 0.4 °C Correction Factor: 0.0 °C Final Temp: 0.4 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D3581 / Date and Initials of person examining contents: ET 3-22-19
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: -Includes date/time/ID Matrix: WT	✓			5.
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: -Pace Containers Used:	✓			10.
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			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. pH<2 / Initial when completed ET / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET / Date: 3-22-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

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.

ATTACHMENT 1-2

June 2019 Sampling Event Laboratory Analytical Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

July 09, 2019

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

RE: Project: TEC LF CCR
Pace Project No.: 60307291

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2019. 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
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Andrew Hare, Westar Energy
Jake Humphrey, KCP&L & Westar, Evergy Companies
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC LF CCR
Pace Project No.: 60307291

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 19-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Missouri SEKS Micro Certification: 10070
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TEC LF CCR
Pace Project No.: 60307291

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307291001	**MW-5-062619**	Water	06/26/19 07:30	06/27/19 08:35
60307291002	**MW-6-062619**	Water	06/26/19 09:40	06/27/19 08:35
60307291003	**MW-1-062619**	Water	06/26/19 10:55	06/27/19 08:35
60307291004	**DUP-062619**	Water	06/26/19 11:00	06/27/19 08:35
60307291005	**MW-4-062619**	Water	06/26/19 12:30	06/27/19 08:35

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC LF CCR
Pace Project No.: 60307291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307291001	**MW-5-062619**	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291002	**MW-6-062619**	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291003	**MW-1-062619**	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291004	**DUP-062619**	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291005	**MW-4-062619**	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307291

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 09, 2019

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.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307291

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 09, 2019

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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307291

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 09, 2019

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.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307291

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 09, 2019

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.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60307291

Sample: MW-5-062619 **Lab ID: 60307291001** Collected: 06/26/19 07:30 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.022**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:34	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:34	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:34	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:34	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:34	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:21	7440-43-9	
Cobalt, Total Recoverable	**0.0019**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:41	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**<0.20**	mg/L	0.20	1		07/09/19 01:39	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60307291

Sample: MW-6-062619 **Lab ID: 60307291002** Collected: 06/26/19 09:40 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.016**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:37	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:37	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:37	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:37	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:37	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:25	7440-43-9	
Cobalt, Total Recoverable	**0.0026**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:43	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.46**	mg/L	0.20	1		07/09/19 02:38	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60307291

Sample: MW-1-062619 **Lab ID: 60307291003** Collected: 06/26/19 10:55 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.065**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:39	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:39	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:39	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:39	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:39	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:40	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:33	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:46	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.34**	mg/L	0.20	1		07/09/19 02:53	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60307291

Sample: DUP-062619 **Lab ID: 60307291004** Collected: 06/26/19 11:00 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.069**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:41	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:41	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:41	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:41	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:41	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:44	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:36	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:48	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.35**	mg/L	0.20	1		07/09/19 03:08	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC LF CCR
Pace Project No.: 60307291

Sample: MW-4-062619 **Lab ID: 60307291005** Collected: 06/26/19 12:30 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.11**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:43	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:43	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:43	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:43	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:43	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:48	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:39	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:50	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.24**	mg/L	0.20	1		07/09/19 03:23	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60307291

QC Batch: 594115 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

METHOD BLANK: 2435092 Matrix: Water
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	07/05/19 15:14	

LABORATORY CONTROL SAMPLE: 2435093

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2435094 2435095

Parameter	Units	60306868001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.20	5	5	4.6	4.5	92	90	70-130	3	20	

MATRIX SPIKE SAMPLE: 2435096

Parameter	Units	60306868002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.20	5	4.5	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60307291

QC Batch: 594823 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

METHOD BLANK: 2437479 Matrix: Water
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/08/19 12:32	
Beryllium	mg/L	<0.0010	0.0010	07/08/19 12:32	
Chromium	mg/L	<0.0050	0.0050	07/08/19 12:32	
Lead	mg/L	<0.010	0.010	07/08/19 12:32	
Lithium	mg/L	<0.010	0.010	07/08/19 12:32	

LABORATORY CONTROL SAMPLE: 2437480

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.98	98	85-115	
Beryllium	mg/L	1	0.99	99	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	0.97	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2437481 2437482

Parameter	Units	60307292003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.27	1	1	1.2	1.3	96	98	70-130	2	20	
Beryllium	mg/L	<0.0010	1	1	0.97	1.0	97	100	70-130	2	20	
Chromium	mg/L	<0.0050	1	1	0.92	0.95	92	95	70-130	3	20	
Lead	mg/L	<0.010	1	1	0.95	0.97	95	97	70-130	2	20	
Lithium	mg/L	<0.010	1	1	1.0	1.1	104	106	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60307291

QC Batch: 594825 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

METHOD BLANK: 2437487 Matrix: Water
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/08/19 14:17	
Arsenic	mg/L	<0.0010	0.0010	07/08/19 14:17	
Cadmium	mg/L	<0.00050	0.00050	07/08/19 14:17	
Cobalt	mg/L	<0.0010	0.0010	07/08/19 14:17	
Molybdenum	mg/L	<0.0010	0.0010	07/08/19 14:17	
Selenium	mg/L	<0.0010	0.0010	07/08/19 14:17	
Thallium	mg/L	<0.0010	0.0010	07/08/19 14:17	

LABORATORY CONTROL SAMPLE: 2437488

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.041	103	85-115	
Arsenic	mg/L	0.04	0.041	103	85-115	
Cadmium	mg/L	0.04	0.042	105	85-115	
Cobalt	mg/L	0.04	0.042	104	85-115	
Molybdenum	mg/L	0.04	0.039	97	85-115	
Selenium	mg/L	0.04	0.041	104	85-115	
Thallium	mg/L	0.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2437489 2437490

Parameter	Units	60307291002 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	0.04	0.04	0.040	0.039	101	98	70-130	3	20	
Arsenic	mg/L	<0.0010	0.04	0.04	0.043	0.042	106	104	70-130	2	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.039	0.037	96	93	70-130	3	20	
Cobalt	mg/L	0.0026	0.04	0.04	0.047	0.045	110	107	70-130	3	20	
Molybdenum	mg/L	<0.0010	0.04	0.04	0.042	0.041	104	101	70-130	3	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.039	0.038	97	95	70-130	2	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.042	0.041	106	103	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC LF CCR
Pace Project No.: 60307291

QC Batch: 595185 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

METHOD BLANK: 2438440 Matrix: Water
Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/08/19 18:58	

LABORATORY CONTROL SAMPLE: 2438441

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2438442 2438443

Parameter	Units	60307333007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.40	2.5	2.5	2.9	2.9	99	99	80-120	0	15	

MATRIX SPIKE SAMPLE: 2438444

Parameter	Units	60307291005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.24	2.5	2.8	102	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC LF CCR
Pace Project No.: 60307291

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC LF CCR
Pace Project No.: 60307291

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307291001	**MW-5-062619**	EPA 200.7	594823	EPA 200.7	594952
60307291002	**MW-6-062619**	EPA 200.7	594823	EPA 200.7	594952
60307291003	**MW-1-062619**	EPA 200.7	594823	EPA 200.7	594952
60307291004	**DUP-062619**	EPA 200.7	594823	EPA 200.7	594952
60307291005	**MW-4-062619**	EPA 200.7	594823	EPA 200.7	594952
60307291001	**MW-5-062619**	EPA 200.8	594825	EPA 200.8	594953
60307291002	**MW-6-062619**	EPA 200.8	594825	EPA 200.8	594953
60307291003	**MW-1-062619**	EPA 200.8	594825	EPA 200.8	594953
60307291004	**DUP-062619**	EPA 200.8	594825	EPA 200.8	594953
60307291005	**MW-4-062619**	EPA 200.8	594825	EPA 200.8	594953
60307291001	**MW-5-062619**	EPA 245.1	594115	EPA 245.1	594129
60307291002	**MW-6-062619**	EPA 245.1	594115	EPA 245.1	594129
60307291003	**MW-1-062619**	EPA 245.1	594115	EPA 245.1	594129
60307291004	**DUP-062619**	EPA 245.1	594115	EPA 245.1	594129
60307291005	**MW-4-062619**	EPA 245.1	594115	EPA 245.1	594129
60307291001	**MW-5-062619**	EPA 300.0	595185		
60307291002	**MW-6-062619**	EPA 300.0	595185		
60307291003	**MW-1-062619**	EPA 300.0	595185		
60307291004	**DUP-062619**	EPA 300.0	595185		
60307291005	**MW-4-062619**	EPA 300.0	595185		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60307291

60307291

Client Name: WStar Energy

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ 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: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T-296 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.3 **Corr. Factor** -1.0 **Corrected** 3.3

Date and initials of person examining contents: DW 6/27/19

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:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
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: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: The analyses on the COC are inaccurate due to an IT glitch in out bottle order system. Please see attached COC

HMW 7/1/19

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.

Pace Analytical
www.pacelabs.com

Page: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	~~brandon.griffin@westarenergy.com~~
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	7 DAY

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Kneeling
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC_0000007956
Project Name:	TEC LF CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: 200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300: Cl, F SO4	4500 H+B	2540C TDS				Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60307291
1	MW-5-062619	WT	G			06/26	730		3										X	X	X	X	X	X		2BP14		~~BPN~~ BPIN	001
2	MW-6-062619	WT	G			06/26	940		3										X	X	X	X	X	X				W6/27	002
3	MW-1-062619	WT	G			06/26	1055		3										X	X	X	X	X	X					003
4	DUP-062619	WT	G			06/26	1100		3										X	X	X	X	X	X					004
5	MW-4-062619	WT	G			06/26	1230		3										X	X	X	X	X	X					005
6																													
7																													
8																													
9																													
10																													
11																													
12																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca,Ba, Be, Cr, Pb, Li	Eli Fredrickson	06/26	835	Victoria Brown/pace	06/27	0835	3.3	Y	N	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: Eli [signature] DATE Signed (MM/DD/YY): 06/27/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical™
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A **Required** Client Information:		Section B **Required** Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10TEC_0000007956	Pace Quote Reference:	
Phone: (785) 575-8135	Fax:	Project Name:	TEC LF CCR	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	**7 DAY**	Project Number:		Pace Profile #:	9656, 2

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location **STATE:** KS

Requested Analysis Filtered (Y/N)

Section D **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Analysis Test Y/N	Analysis Test: 200.7 Total Metals*	Analysis Test: 200.8 Total Metals**	Analysis Test: 245.1 Total Mercury	Analysis Test: 300: Fluoride	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
200.7 Total Metals*: Ba, Be, Cr, Pb, Li							
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: **DATE Signed (MM/DD/YY):**

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

July 17, 2019

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

RE: Project: TEC LF CCR
Pace Project No.: 60307734

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2019. 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
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY
Andrew Hare, Westar Energy
Jake Humphrey, KCP&L & Westar, Evergy Companies
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC LF CCR
Pace Project No.: 60307734

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TEC LF CCR
Pace Project No.: 60307734

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307734001	**MW-5_062619**	Water	06/26/19 07:30	06/27/19 09:30
60307734002	**MW-6_062619**	Water	06/26/19 09:40	06/27/19 09:30
60307734003	**MW-1_062619**	Water	06/26/19 10:55	06/27/19 09:30
60307734004	**DUP_062619**	Water	06/26/19 11:00	06/27/19 09:30
60307734005	**MW-4_062619**	Water	06/26/19 12:30	06/27/19 09:30

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC LF CCR
Pace Project No.: 60307734

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307734001	**MW-5_062619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734002	**MW-6_062619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734003	**MW-1_062619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734004	**DUP_062619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734005	**MW-4_062619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307734

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: July 17, 2019

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.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307734

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: July 17, 2019

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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC LF CCR
Pace Project No.: 60307734

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 17, 2019

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.

Additional Comments:

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

Sample: MW-5_062619 **Lab ID: 60307734001** Collected: 06/26/19 07:30 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.557 ± 0.566 (0.856) C:NA T:94%**	pCi/L	07/15/19 15:03	13982-63-3	
Radium-228	EPA 904.0	**0.481 ± 0.370 (0.734) C:82% T:80%**	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.04 ± 0.936 (1.59)**	pCi/L	07/16/19 13:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

Sample: MW-6_062619 **Lab ID: 60307734002** Collected: 06/26/19 09:40 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.24 ± 0.706 (0.649) C:NA T:83%**	pCi/L	07/15/19 15:03	13982-63-3	
Radium-228	EPA 904.0	**1.36 ± 0.521 (0.818) C:81% T:79%**	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	**2.60 ± 1.23 (1.47)**	pCi/L	07/16/19 13:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

Sample: MW-1_062619 **Lab ID: 60307734003** Collected: 06/26/19 10:55 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.259 ± 0.448 (0.801) C:NA T:86%**	pCi/L	07/15/19 15:03	13982-63-3	
Radium-228	EPA 904.0	**0.466 ± 0.369 (0.735) C:82% T:80%**	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.725 ± 0.817 (1.54)**	pCi/L	07/16/19 13:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

Sample: DUP_062619 **Lab ID: 60307734004** Collected: 06/26/19 11:00 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.12 ± 0.745 (0.924) C:NA T:88%**	pCi/L	07/15/19 15:03	13982-63-3	
Radium-228	EPA 904.0	**0.547 ± 0.359 (0.688) C:81% T:88%**	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.67 ± 1.10 (1.61)**	pCi/L	07/16/19 13:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

Sample: MW-4_062619 **Lab ID: 60307734005** Collected: 06/26/19 12:30 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.321 ± 0.499 (0.864) C:NA T:99%**	pCi/L	07/15/19 15:16	13982-63-3	
Radium-228	EPA 904.0	**1.52 ± 0.515 (0.730) C:79% T:89%**	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.84 ± 1.01 (1.59)**	pCi/L	07/16/19 13:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

QC Batch: 350866 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60307734001, 60307734002, 60307734003, 60307734004, 60307734005

METHOD BLANK: 1705168 Matrix: Water
Associated Lab Samples: 60307734001, 60307734002, 60307734003, 60307734004, 60307734005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.205 ± 0.288 (0.617) C:79% T:83%	pCi/L	07/15/19 12:40	

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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC LF CCR
Pace Project No.: 60307734

QC Batch: 350862 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60307734001, 60307734002, 60307734003, 60307734004, 60307734005

METHOD BLANK: 1705164 Matrix: Water
Associated Lab Samples: 60307734001, 60307734002, 60307734003, 60307734004, 60307734005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.474 ± 0.402 (0.498) C:NA T:85%	pCi/L	07/15/19 14:49	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC LF CCR
Pace Project No.: 60307734

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC LF CCR
Pace Project No.: 60307734

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307734001	**MW-5_062619**	EPA 903.1	350862		
60307734002	**MW-6_062619**	EPA 903.1	350862		
60307734003	**MW-1_062619**	EPA 903.1	350862		
60307734004	**DUP_062619**	EPA 903.1	350862		
60307734005	**MW-4_062619**	EPA 903.1	350862		
60307734001	**MW-5_062619**	EPA 904.0	350866		
60307734002	**MW-6_062619**	EPA 904.0	350866		
60307734003	**MW-1_062619**	EPA 904.0	350866		
60307734004	**DUP_062619**	EPA 904.0	350866		
60307734005	**MW-4_062619**	EPA 904.0	350866		
60307734001	**MW-5_062619**	Total Radium Calculation	352006		
60307734002	**MW-6_062619**	Total Radium Calculation	352006		
60307734003	**MW-1_062619**	Total Radium Calculation	352006		
60307734004	**DUP_062619**	Total Radium Calculation	352006		
60307734005	**MW-4_062619**	Total Radium Calculation	352006		

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	~~Brandon Griffin~~ Adam Kneeling	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	~~brandon.l.griffin@westarenergy.com~~	Purchase Order No.:	10TEC-0000007956	Pace Quote Reference:	
Phone: (785) 575-8135	Fax:	Project Name:	TEC LF CCR	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	15 Day	Project Number:		Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~MW-50~~ MW-5_062619	WT	G			06/26	730		2										X	X	X		001
2	MW-6_062619	WT	G			06/26	940		2										X	X	X		002
3	MW-1_062619	WT	G			06/26	1055		2										X	X	X		003
4	DUP-062619	WT	G			06/26	1100		2										X	X	X		004
5	MW-4_062619	WT	G			06/26	1230		2										X	X	X		
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Eli Fredrickson	06/26/19	1800	[illegible signature]	062719	930	NA	~~Y~~ N MG 062719	X	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 06/26/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace-KS Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label

Tracking #: 100182501469

LIMS Login

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used NA 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

Comments:	Yes	No	N/A	pH paper Lot# 10547381 / Date and Initials of person examining contents: MG 6/27/19
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: -Includes date/time/ID Matrix: WT	✓			5.
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: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: MG Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 62919

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

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.

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS
Cert. Needed: ☐ Yes ☐ No

Workorder: 60307734 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 6/27/2019 **Results Requested By:** 7/9/2019

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30312269

30312269

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Radium 226, 228	total Radium	LAB USE ONLY
1	MW-5_062619	PS	6/26/2019 07:30	60307734001	Water	2	X	X	001
2	MW-6_062619	PS	6/26/2019 09:40	60307734002	Water	2	X	X	002
3	MW-1_062619	PS	6/26/2019 10:55	60307734003	Water	2	X	X	003
4	DUP_062619	PS	6/26/2019 11:00	60307734004	Water	2	X	X	004
5	MW-4_062619	PS	6/26/2019 12:30	60307734005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature] PACE	06/27/19 0930
2			[signature]	07/05/19
3				

Comments

Cooler Temperature on Receipt ____°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.*

Pace Analytical™
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

30312269

Page: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave, Topeka, KS 66612
Email To:	~~brandon.l.griffin@westarenergy.com~~
Phone:	(785) 575-8135
Fax:	
Requested Due Date/TAT:	15 Day

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Kneeling
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC LF CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

Valid Matrix Codes: DRINKING WATER DW, WATER WT, WASTE WATER WW, PRODUCT P, SOIL/SOLID SL, OIL OL, WIPE WP, AIR AR, OTHER OT, TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~MW-50~~ MW-5_062619	WT	G			06/26	730		2										X	X	X		001
2	MW-6_062619	WT	G			06/26	940		2										X	X	X		002
3	MW-1_062619	WT	G			06/26	1055		2										X	X	X		003
4	DUP-062619	WT	G			06/26	1100		2										X	X	X		004
5	MW-4_062619	WT	G			06/26	1230		2										X	X	X		
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Eli Fredrickson	06/26/19	1800	[illegible]	062719	930	N/A	~~Y~~ N MG 062719	X	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 06/26/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace-KS Project # #-30312269

Label	
LIMS Login	

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ______

Tracking #: 1007 8250 1469

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used: NA 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

pH paper Lot# 1014281 Date and Initials of person examining contents: MG 102919

Comments:	Yes	No	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 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:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: MG Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 102919

Client Notification/ Resolution:

Person Contacted: ______ Date/Time: ______ Contacted By: ______

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.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-9 5April2019)

ATTACHMENT 1-3

September 2019 Sampling Event Laboratory Analytical Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 02, 2019

Adam Kneeling
Haley & Aldrich, Inc.
400 E. Van Buren St
Suite 545
Phoenix, AZ 85004

RE: Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Dear Adam Kneeling:
Enclosed are the analytical results for sample(s) received by the laboratory on September 10, 2019. 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
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Bob Beck, Kansas City Power & Light Company
HEATH HORYNA, WESTAR ENERGY
Andrew Hare, KCP&L and Westar, Evergy Companies
Jake Humphrey, KCP&L and Westar, Evergy Companies
JARED MORRISON, KCP&L and Westar, Evergy Companies
Melissa Michels, Westar Energy
Danielle Zinmaster, Haley & Aldrich

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60314408001	**MW-1**	Water	09/06/19 10:40	09/10/19 09:20
60314408002	**MW-4**	Water	09/07/19 18:27	09/10/19 09:20
60314408003	**MW-5**	Water	09/07/19 14:33	09/10/19 09:20
60314408004	**MW-6**	Water	09/07/19 12:34	09/10/19 09:20
60314408005	**DUPLICATE**	Water	09/06/19 10:40	09/10/19 09:20

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60314408001	**MW-1**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408002	**MW-4**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408003	**MW-5**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408004	**MW-6**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408005	**DUPLICATE**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Evergy Kansas Central, Inc.
Date: October 02, 2019

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.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Evergy Kansas Central, Inc.
Date: October 02, 2019

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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Evergy Kansas Central, Inc.
Date: October 02, 2019

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.

Additional Comments:

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Sample: MW-1 **Lab ID: 60314408001** Collected: 09/06/19 10:40 Received: 09/10/19 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.714 ± 0.531 (0.699) C:NA T:88%**	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	**1.01 ± 0.558 (1.04) C:73% T:84%**	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**1.72 ± 1.09 (1.74)**	pCi/L	09/26/19 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Sample: MW-4 **Lab ID: 60314408002** Collected: 09/07/19 18:27 Received: 09/10/19 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.429 ± 0.347 (0.194) C:NA T:80%**	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	**1.37 ± 0.623 (1.10) C:77% T:83%**	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**1.80 ± 0.970 (1.29)**	pCi/L	09/26/19 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Sample: MW-5 **Lab ID: 60314408003** Collected: 09/07/19 14:33 Received: 09/10/19 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.484 ± 0.379 (0.445) C:NA T:90%**	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	**0.523 ± 0.466 (0.955) C:77% T:86%**	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**1.01 ± 0.845 (1.40)**	pCi/L	09/26/19 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Sample: MW-6 **Lab ID: 60314408004** Collected: 09/07/19 12:34 Received: 09/10/19 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0676 ± 0.308 (0.497) C:NA T:85%**	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	**-0.0508 ± 0.451 (1.04) C:73% T:89%**	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.0676 ± 0.759 (1.54)**	pCi/L	09/26/19 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Sample: DUPLICATE **Lab ID: 60314408005** Collected: 09/06/19 10:40 Received: 09/10/19 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0626 ± 0.407 (0.820) C:NA T:96%**	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	**0.745 ± 0.399 (0.703) C:68% T:94%**	pCi/L	09/20/19 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.808 ± 0.806 (1.52)**	pCi/L	09/26/19 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

QC Batch: 361440 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60314408001, 60314408002, 60314408003, 60314408004, 60314408005

METHOD BLANK: 1754431 Matrix: Water
Associated Lab Samples: 60314408001, 60314408002, 60314408003, 60314408004, 60314408005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.389 ± 0.395 (0.598) C:NA T:86%	pCi/L	09/23/19 14:57	

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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

QC Batch: 361441 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60314408001, 60314408002, 60314408003, 60314408004, 60314408005

METHOD BLANK: 1754435 Matrix: Water
Associated Lab Samples: 60314408001, 60314408002, 60314408003, 60314408004, 60314408005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0333 ± 0.280 (0.649) C:78% T:87%	pCi/L	09/20/19 15:01	

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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314408

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60314408001	**MW-1**	EPA 903.1	361440		
60314408002	**MW-4**	EPA 903.1	361440		
60314408003	**MW-5**	EPA 903.1	361440		
60314408004	**MW-6**	EPA 903.1	361440		
60314408005	**DUPLICATE**	EPA 903.1	361440		
60314408001	**MW-1**	EPA 904.0	361441		
60314408002	**MW-4**	EPA 904.0	361441		
60314408003	**MW-5**	EPA 904.0	361441		
60314408004	**MW-6**	EPA 904.0	361441		
60314408005	**DUPLICATE**	EPA 904.0	361441		
60314408001	**MW-1**	Total Radium Calculation	363319		
60314408002	**MW-4**	Total Radium Calculation	363319		
60314408003	**MW-5**	Total Radium Calculation	363319		
60314408004	**MW-6**	Total Radium Calculation	363319		
60314408005	**DUPLICATE**	Total Radium Calculation	363319		

Pace Analytical
www.pacelabs.com

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:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	15 Day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC 322 Landfill CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			9/6/19	1040		2			2						X	X	X		
2	MW-4	WT	G			9/7/19	1827		2			2						X	X	X		
3	MW-5	WT	G			9/7/19	1433		2			2						X	X	X		
4	MW-6	WT	G			9/7/19	1234		2			2						X	X	X		
5	Duplicate	WT	G			9/6/19	1040		2			2						X	X	X		
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Misha Miller-Gilmore	9/9/19	0815				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Misha Miller-Gilmore

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/9/19

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Westar Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label

Tracking #: 1219 2977 9773

LIMS Login

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 1.4 °C Correction Factor: 0 °C Final Temp: 1.4 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1003581 / Date and Initials of person examining contents: 09/10/14 JB
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: -Includes date/time/ID Matrix: WT	✓			5.
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: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed JB / Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		✓		17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JB / Date:

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

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.

Chain of Custody

[X] Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS
Cert. Needed: [X] Yes [ ] No

Pace Analytical® www.pacelabs.com

Workorder: 60314408 **Workorder Name:** TEC 322 LANDFILL CCR **Owner Received Date:** 9/10/2019 **Results Requested By:** 9/19/2019

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Radium-226 & Total Sum	Radium-228	LAB USE ONLY
1	MW-1	PS	9/6/2019 10:40	60314408001	Water	2	X	X	
2	MW-4	PS	9/7/2019 18:27	60314408002	Water	2	X	X	
3	MW-5	PS	9/7/2019 14:33	60314408003	Water	2	X	X	
4	MW-6	PS	9/7/2019 12:34	60314408004	Water	2	X	X	
5	DUPLICATE	PS	9/6/2019 10:40	60314408005	Water	2	X	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1			MJ Sot	9-10-19 0800
2				
3				

Comments
Direct Ship
*Please provide QC sheets.
MJS 9-10-19

Cooler Temperature on Receipt 1.6 °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.

WO# : 30324181
30324181

CHAIN-OF-CUSTODY / Analytical Request Document

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

#_30324181

Pace Analytical™ www.pacelabs.com

Page: 1 of 1

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	15 Day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC 322 Landfill CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			9/6/19	1040		2			2						X	X	X		
2	MW-4	WT	G			9/7/19	1827		2			2						X	X	X		
3	MW-5	WT	G			9/7/19	1433		2			2						X	X	X		
4	MW-6	WT	G			9/7/19	1234		2			2						X	X	X		
5	Duplicate	WT	G			9/6/19	1040		2			2						X	X	X		
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Misha Miller-Gilmore	9/9/19	0815	MSalt	9-10-19	0920	1.6	4	4	4

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Misha Miller-Gilmore

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/9/19

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Westar

Project # # 30324181

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label MJS

Tracking #: 1219 2977 9773

LIMS Login MJS

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 1.4 °C Correction Factor: 0 °C Final Temp: 1.4 °C

Temp should be above freezing to 6°C

pH paper Lot# 1003581 Date and Initials of person examining contents: 09/10/19 JMB

Comments:	Yes	No	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: -Includes date/time/ID Matrix: WT	✓			5.
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: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed JMB Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JMB Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

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.

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-226
Analyst:	MK1
Date:	9/17/2019
Batch ID:	49824
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1754431
MB concentration:	0.389
M/B Counting Uncertainty:	0.392
MB MDC:	0.598
MB Numerical Performance Indicator:	1.94
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS49824	LCSD49824
Count Date:	9/23/2019	
Spike I.D.:	19-022	
Spike Concentration (pCi/mL):	32.118	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.669	
Target Conc. (pCi/L, g, F):	4.799	
Uncertainty (Calculated):	0.226	
Result (pCi/L, g, F):	4.938	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.037	
Numerical Performance Indicator:	0.26	
Percent Recovery:	102.91%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/10/2019	
Sample I.D.	35496342004	
Sample MS I.D.	35496342004MS	
Sample MSD I.D.		
Spike I.D.:	19-022	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.119	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.656	
MS Target Conc.(pCi/L, g, F):	9.799	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.461	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.097	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.190	
Sample Matrix Spike Result:	7.551	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.164	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-3.631	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	76.07%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	35496440001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	35496440001DUP	
Sample Result (pCi/L, g, F):	1.062	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.694	
Sample Duplicate Result (pCi/L, g, F):	0.493	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.535	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.273	35496440001
Duplicate RPD:	73.17%	35496440001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail**	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

**Batch must be re-prepped due to unacceptable precision.

CAVE 9/23/19

Q-23-19 MC

Quality Control Sample Performance Assessment

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-228
Analyst:	VAL
Date:	9/18/2019
Worklist:	49825
Matrix:	WT

Method Blank Assessment	
MB Sample ID	1754435
MB concentration:	0.033
MB 2 Sigma CSU:	0.280
MB MDC:	0.649
MB Numerical Performance Indicator:	0.23
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS49825	LCSD49825
Count Date:	9/20/2019	9/20/2019
Spike I.D.:	19-026	19-026
Decay Corrected Spike Concentration (pCi/mL):	35.351	35.351
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.804	0.806
Target Conc. (pCi/L, g, F):	4.395	4.388
Uncertainty (Calculated):	0.215	0.215
Result (pCi/L, g, F):	4.140	4.505
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.981	1.026
Numerical Performance Indicator:	-0.50	0.22
Percent Recovery:	94.20%	102.66%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/9/2019	
Sample I.D.	35496557001	
Sample MS I.D.	35496557001MS	
Sample MSD I.D.		
Spike I.D.:	19-026	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	35.480	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.812	
MS Target Conc.(pCi/L, g, F):	8.744	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.428	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.414	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.313	
Sample Matrix Spike Result:	8.231	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.656	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	-1.044	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	89.40%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	LCS49825	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD49825	
Sample Result (pCi/L, g, F):	4.140	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.981	
Sample Duplicate Result (pCi/L, g, F):	4.505	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.026	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.504	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	8.59%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JJT 9-23-19

CMM 9/23/19

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

September 13, 2019

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

RE: Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 09, 2019. 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
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Bob Beck, Kansas City Power & Light Company
HEATH HORYNA, WESTAR ENERGY
Andrew Hare, Westar Energy
Jake Humphrey, KCP&L & Westar, Evergy Companies
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy
Danielle Zinmaster, Haley & Aldrich

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 19-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60314218001	**MW-1**	Water	09/06/19 10:40	09/09/19 15:25
60314218002	**MW-4**	Water	09/07/19 18:27	09/09/19 15:25
60314218003	**MW-5**	Water	09/07/19 14:33	09/09/19 15:25
60314218004	**MW-6**	Water	09/07/19 12:34	09/09/19 15:25
60314218005	**DUPLICATE**	Water	09/06/19 10:40	09/09/19 15:25

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60314218001	**MW-1**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MGS, MJK	3	PASI-K
60314218002	**MW-4**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60314218003	**MW-5**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MGS, MJK	3	PASI-K
60314218004	**MW-6**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60314218005	**DUPLICATE**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MGS, MJK	3	PASI-K

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 13, 2019

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: 608466

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60314116006,60314218001

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

- MS (Lab ID: 2485614)
  - Calcium
- MSD (Lab ID: 2485616)
  - Calcium

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 13, 2019

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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 13, 2019

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.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 13, 2019

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.
- DUPLICATE (Lab ID: 60314218005)
- MW-1 (Lab ID: 60314218001)
- MW-4 (Lab ID: 60314218002)
- MW-5 (Lab ID: 60314218003)
- MW-6 (Lab ID: 60314218004)

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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 13, 2019

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: 608942

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60314116004,60314218003

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

- MS (Lab ID: 2487474)
  - Chloride

Additional Comments:

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Sample: MW-1 **Lab ID: 60314218001** Collected: 09/06/19 10:40 Received: 09/09/19 15:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.076**	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:39	7440-39-3	
Boron, Total Recoverable	**0.37**	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:39	7440-42-8	
Calcium, Total Recoverable	**151**	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:39	7440-70-2	M1
Lithium	**<0.010**	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:39	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cobalt, Total Recoverable	**0.0017**	mg/L	0.0010	1	09/10/19 16:39	09/12/19 15:58	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**905**	mg/L	10.0	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		09/10/19 10:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**29.3**	mg/L	2.0	2		09/12/19 17:17	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	1		09/11/19 18:47	16984-48-8	
Sulfate	**364**	mg/L	100	100		09/11/19 19:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Sample: MW-4 **Lab ID: 60314218002** Collected: 09/07/19 18:27 Received: 09/09/19 15:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.10**	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:50	7440-39-3	
Boron, Total Recoverable	**<0.10**	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:50	7440-42-8	
Calcium, Total Recoverable	**146**	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:50	7440-70-2	
Lithium	**<0.010**	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:50	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:00	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**987**	mg/L	13.3	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		09/10/19 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**266**	mg/L	20.0	20		09/11/19 20:20	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	1		09/11/19 20:05	16984-48-8	
Sulfate	**140**	mg/L	20.0	20		09/11/19 20:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Sample: MW-5 **Lab ID: 60314218003** Collected: 09/07/19 14:33 Received: 09/09/19 15:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.019**	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:52	7440-39-3	
Boron, Total Recoverable	**1.5**	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:52	7440-42-8	
Calcium, Total Recoverable	**328**	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:52	7440-70-2	
Lithium	**0.017**	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:52	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cobalt, Total Recoverable	**0.0020**	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:08	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1750**	mg/L	13.3	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		09/10/19 10:51		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**41.9**	mg/L	5.0	5		09/12/19 17:33	16887-00-6	M1
Fluoride	**0.25**	mg/L	0.20	1		09/11/19 20:52	16984-48-8	
Sulfate	**857**	mg/L	100	100		09/11/19 21:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Sample: MW-6 **Lab ID: 60314218004** Collected: 09/07/19 12:34 Received: 09/09/19 15:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.014**	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:54	7440-39-3	
Boron, Total Recoverable	**0.71**	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:54	7440-42-8	
Calcium, Total Recoverable	**295**	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:54	7440-70-2	
Lithium	**0.015**	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:54	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cobalt, Total Recoverable	**0.0024**	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:09	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1600**	mg/L	13.3	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		09/10/19 10:52		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.5**	mg/L	20.0	20		09/11/19 21:54	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	1		09/11/19 21:38	16984-48-8	
Sulfate	**783**	mg/L	100	100		09/11/19 22:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Sample: DUPLICATE **Lab ID: 60314218005** Collected: 09/06/19 10:40 Received: 09/09/19 15:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.079**	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:56	7440-39-3	
Boron, Total Recoverable	**0.39**	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:56	7440-42-8	
Calcium, Total Recoverable	**154**	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:56	7440-70-2	
Lithium	**<0.010**	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:56	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cobalt, Total Recoverable	**0.0017**	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:11	7440-48-4	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**893**	mg/L	10.0	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		09/10/19 10:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**30.5**	mg/L	2.0	2		09/12/19 18:05	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	1		09/11/19 22:56	16984-48-8	
Sulfate	**331**	mg/L	20.0	20		09/11/19 23:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

QC Batch: 608466 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

METHOD BLANK: 2485612 Matrix: Water
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/11/19 10:55	
Boron	mg/L	<0.10	0.10	09/11/19 10:55	
Calcium	mg/L	<0.20	0.20	09/11/19 10:55	
Lithium	mg/L	<0.010	0.010	09/11/19 10:55	

LABORATORY CONTROL SAMPLE: 2485613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	1.0	102	85-115	
Calcium	mg/L	10	10.5	105	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE SAMPLE: 2485614

Parameter	Units	60314116006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.035	1	0.98	95	70-130	
Boron	mg/L	2260 ug/L	1	3.1	86	70-130	
Calcium	mg/L	545000 ug/L	10	537	-80	70-130	M1
Lithium	mg/L	0.057	1	1.0	96	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2485615 2485616

Parameter	Units	60314218001 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	1.1	1.1	101	98	70-130	3	20	
Boron	mg/L	0.37	1	1	1.4	1.3	101	95	70-130	4	20	
Calcium	mg/L	151	10	10	161	156	100	48	70-130	3	20	M1
Lithium	mg/L	<0.010	1	1	1.0	0.97	100	97	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

QC Batch: 608467 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

METHOD BLANK: 2485617 Matrix: Water
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cobalt	mg/L	<0.0010	0.0010	09/12/19 16:02	

LABORATORY CONTROL SAMPLE: 2485618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.04	0.041	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2485619 2485620

Parameter	Units	60314218002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	mg/L	<0.0010	0.04	0.04	0.041	0.041	102	104	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

QC Batch: 608845 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

METHOD BLANK: 2487133 Matrix: Water
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/12/19 07:13	

LABORATORY CONTROL SAMPLE: 2487134

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2487135

Parameter	Units	60313369025 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	190	189	1	10	

SAMPLE DUPLICATE: 2487136

Parameter	Units	60314218004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1600	1520	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

QC Batch: 608287 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

SAMPLE DUPLICATE: 2485035

Parameter	Units	60313981001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.4	8.5	2	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

QC Batch: 608814 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

METHOD BLANK: 2486917 Matrix: Water
Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/11/19 12:25	
Fluoride	mg/L	<0.20	0.20	09/11/19 12:25	
Sulfate	mg/L	<1.0	1.0	09/11/19 12:25	

LABORATORY CONTROL SAMPLE: 2486918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2486919 2486920

Parameter	Units	60313018002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	87.1	50	50	137	137	100	99	80-120	0	15	
Fluoride	mg/L	0.43	2.5	2.5	3.1	3.2	108	112	80-120	3	15	
Sulfate	mg/L	277	250	250	529	530	101	101	80-120	0	15	

MATRIX SPIKE SAMPLE: 2486921

Parameter	Units	60313018004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.1	5	9.1	101	80-120	
Fluoride	mg/L	0.51	2.5	3.3	110	80-120	
Sulfate	mg/L	59.5	25	86.0	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

QC Batch: 608942 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60314218001, 60314218003, 60314218005

METHOD BLANK: 2487470 Matrix: Water
Associated Lab Samples: 60314218001, 60314218003, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/12/19 10:12	

LABORATORY CONTROL SAMPLE: 2487471

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2487472 2487473

Parameter	Units	60314116004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	33.6	25	25	61.7	61.4	112	111	80-120	1	15	

MATRIX SPIKE SAMPLE: 2487474

Parameter	Units	60314218003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	41.9	25	74.7	131	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

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

ANALYTE QUALIFIERS

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.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60314218

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60314218001	**MW-1**	EPA 200.7	608466	EPA 200.7	608606
60314218002	**MW-4**	EPA 200.7	608466	EPA 200.7	608606
60314218003	**MW-5**	EPA 200.7	608466	EPA 200.7	608606
60314218004	**MW-6**	EPA 200.7	608466	EPA 200.7	608606
60314218005	**DUPLICATE**	EPA 200.7	608466	EPA 200.7	608606
60314218001	**MW-1**	EPA 200.8	608467	EPA 200.8	608607
60314218002	**MW-4**	EPA 200.8	608467	EPA 200.8	608607
60314218003	**MW-5**	EPA 200.8	608467	EPA 200.8	608607
60314218004	**MW-6**	EPA 200.8	608467	EPA 200.8	608607
60314218005	**DUPLICATE**	EPA 200.8	608467	EPA 200.8	608607
60314218001	**MW-1**	SM 2540C	608845		
60314218002	**MW-4**	SM 2540C	608845		
60314218003	**MW-5**	SM 2540C	608845		
60314218004	**MW-6**	SM 2540C	608845		
60314218005	**DUPLICATE**	SM 2540C	608845		
60314218001	**MW-1**	SM 4500-H+B	608287		
60314218002	**MW-4**	SM 4500-H+B	608287		
60314218003	**MW-5**	SM 4500-H+B	608287		
60314218004	**MW-6**	SM 4500-H+B	608287		
60314218005	**DUPLICATE**	SM 4500-H+B	608287		
60314218001	**MW-1**	EPA 300.0	608814		
60314218001	**MW-1**	EPA 300.0	608942		
60314218002	**MW-4**	EPA 300.0	608814		
60314218003	**MW-5**	EPA 300.0	608814		
60314218003	**MW-5**	EPA 300.0	608942		
60314218004	**MW-6**	EPA 300.0	608814		
60314218005	**DUPLICATE**	EPA 300.0	608814		
60314218005	**DUPLICATE**	EPA 300.0	608942		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60314218

60314218

Client Name: Westar Energy

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ 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: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T-300 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.8/0.9 **Corr. Factor** 0.0 **Corrected** 1.8/0.9

Date and initials of person examining contents: PV 9/9/19

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:	☑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: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10TEC-0000007956	Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	TEC 322 Landfill CCR	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	2540C TDS	300: Cl, F SO4	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			9/16/19	1040		3	2		1						X	X	X	X	X		BPIN 2BPM 001
2	MW-4	WT	G			9/17/19	1827		3	2		1						X	X	X	X	X		002
3	MW-5	WT	G			9/17/19	1433		3	2		1						X	X	X	X	X		003
4	MW-6	WT	G			9/17/19	1234		3	2		1						X	X	X	X	X		004
5	Duplicate	WT	G			~~9/17/19~~	~~1234~~ MNG		3	2		1						X	X	X	X	X		005
6						9/16/19	1040																	
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Li	Misha Miller-Gilmore / HKA	9/9/19	0815		9/9/19	1525	1-8	X	X	X
200.8 Total Metals**: Co							09	X	X	X

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Misha Miller-Gilmore

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/9/19

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

ATTACHMENT 2

Statistical Analyses

ATTACHMENT 2-1

September 2018 Semi-Annual Sampling Event Statistical Analyses

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

TECHNICAL MEMORANDUM

March 18, 2022
File No. 0204993-000

TO: Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc.)
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Senior Associate – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: September 2018 Semi-annual Groundwater Assessment Monitoring Data Statistical Evaluation
Completed January 14, 2019
Tecumseh Energy Center
322 Landfill

Pursuant to Code of Federal Regulations Title 40 (40 CFR) §257.93 and §257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the September 2018 semi-annual assessment monitoring groundwater sampling event for the Tecumseh Energy Center (TEC) 322 Landfill. This semi-annual assessment monitoring groundwater sampling event was completed on September 5, 2018, with laboratory results received and accepted October 2018.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background values and if one or more of the constituents have been detected at statistically significant levels (SSL) above the Groundwater Protection Standard (GWPS) consistent with the requirements of the Rule. GWPSs for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level, regional screening level, or background concentration.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residuals (CCR) unit (40 CFR §257.93(f)(1-4)). The statistical method used for these evaluations, tolerance limit (TL), was certified by Haley & Aldrich, Inc. on January 14, 2019. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTL), and a minimum 95 percent confidence coefficient and 95 percent coverage. The most recent groundwater sampling event from each compliance well was compared to the corresponding background UTL to determine if an SSI existed.

STATISTICAL EVALUATION

An interwell evaluation was used to determine SSIs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL method was used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a TL is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using the background dataset for all Appendix IV constituents that were detected in the annual assessment monitoring sample event in June 2018 using parametric TLs. If an Appendix IV constituent concentration from the September 2018 sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent will be used to evaluate if an SSI is present. The LCL is the lower end of the confidence interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location (MW-4) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UTL calculation. Per the document, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009,* background concentrations were updated based on statistical evaluation of analytical results collected through September 2018.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the September 2018 semi-annual assessment monitoring event were compared to their respective background UTLs and GWPSs (Table I). A sample concentration greater than the background UTL is considered to represent an SSI. A sample concentration greater than the GWPS is considered to represent an SSL. The results of the groundwater assessment monitoring statistical evaluation are discussed below and provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in September 2018, no SSLs above GWPS occurred at the TEC 322 Landfill.**

Tables:

Table I – Summary of Semi-annual Assessment Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
SEPTEMBER 2018 SAMPLING EVENT
TECUMSEH ENERGY CENTER
322 LANDFILL

									MCL Comparison									Inter-well Analysis		Groundwater Protection Standard		
Location Id	**Frequency of Detection**	**Percent Non-Detects**	**Maximum Detect**	**Variance**	**Standard Deviation**	**Coefficient of Variance**	**CCR MCL/RSL § 257.95(h)(2)***	**Report Result Unit**	**Detection Exceedances (Y/N)**	**Number of Detection Exceedances**	**Number of Non-Detection Exceedances**	**Outlier Presence**	**Outlier Removed**	**Trend**	**Distribution Well***	**September 2018 Concentration (mg/L)**	**Detect?**	**Upper Tolerance Limit (mg/L)[1]**	**SSI (exceedance above Background at Individual Well)**	**GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L**	**Exceedance above GWPS at Individual Well**	**SSL**
	CCR Appendix-IV: Barium, Total (µg/L)																					
MW-4 (upgradient)	10/10	0%	0.14	0.1211	0.01101	0.09248	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.12	Y	0.1402		2.0		
MW-1	11/11	0%	0.20	2.963	0.05444	0.3722	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.079	Y		No		N	No
MW-5	10/10	0%	0.04	0.03401	0.005832	0.2061	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.033	Y		No		N	No
MW-6	10/10	0%	0.041	0.05262	0.007254	0.2769	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.019	Y		No		N	No
	CCR Appendix-IV: Cobalt, Total (µg/L)																					
MW-4 (upgradient)	0/10	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.0010		0.006		
MW-1	8/11	27%	0.0086	0.005485	0.002342	0.8502	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0029	Y		Yes		N	No
MW-5	10/10	0%	0.0021	0.0001222	0.0003496	0.1942	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0013	Y		Yes		N	No
MW-6	10/10	0%	0.0033	0.0005143	0.0007172	0.3132	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0017	Y		Yes		N	No
	CCR Appendix-IV: Fluoride, Total (µg/L)																					
MW-4 (upgradient)	8/11	27%	0.35	1.745	0.4178	0.1768	4.0	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.35	Y	0.3500		4.0		
MW-1	12/12	0%	0.46	1.627	0.04034	0.1076	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.39	Y		Yes		N	No
MW-5	11/12	8%	0.42	33.888	0.05821	0.1919	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.35	Y		No		N	No
MW-6	11/11	0%	0.50	4.682	0.06842	0.1940	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.41	Y		Yes		N	No
	CCR Appendix-IV: Lithium, Total (µg/L)																					
MW-4 (upgradient)	0/10	100%	-	0	0	0	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040		
MW-1	1/11	91%	0.010	0	0	0	0.040	mg/L	N	0	0	No	No	NT	Non-parametric	0.010	N		No		N	No
MW-5	7/10	30%	0.024	0.03028	0.005503	0.0003335	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.014	Y		Yes		N	No
MW-6	7/10	30%	0.022	0.02388	0.004886	0.0003236	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	N		No		N	No
	CCR Appendix-IV: Radium-226 & 228, Total (pCi/L)																					
MW-4 (upgradient)	10/10	0%	2.641	0.513	0.7162	0.4192	5	pCi/L	N	0	0	No	No	Stable	Normal	2.60	Y	3.0555		5		
MW-1	11/11	0%	1.78	0.2726	0.5221	0.699	5	pCi/L	N	0	0	No	No	Stable	Normal	0.855	N		No		N	No
MW-5	10/10	0%	1.48	0.07913	0.2813	0.263	5	pCi/L	N	0	0	No	No	Stable	Normal	0.530	N		No		N	No
MW-6	10/10	0%	1.95	0.2764	0.5258	0.64	5	pCi/L	N	0	0	No	No	Stable	Normal	1.95	N		No		N	No

Notes:

[1] Based on baseline data collected from 08/17/2016 through 09/5/2018

** Values obtained from U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations (CFR) § 257.95(h)(2) on December 23, 2020.*

CCR = coal combustion residuals

GWPS = Groundwater Protection Standard

MCL = maximum contaminant level

mg/L = milligrams per Liter

NA = not analyzed

pCi/L = picoCuries per Liter

SSI = statistically significant increase

SSL = statistically significant level

UTL = upper tolerance limits

ATTACHMENT 2-2

March 2019 Semi-Annual Sampling Event Statistical Analyses

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

TECHNICAL MEMORANDUM

March 18, 2022
File No. 0204993-000

TO: Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc.)
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Senior Associate – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: March 2019 Semi-annual Groundwater Assessment Monitoring Data
Statistical Evaluation
Completed July 15, 2019
Tecumseh Energy Center
322 Landfill

Pursuant to Code of Federal Regulations Title 40 (40 CFR) §257.93 and §257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the March 2019 semi-annual assessment monitoring groundwater sampling event for the Tecumseh Energy Center (TEC) 322 Landfill. This semi-annual assessment monitoring groundwater sampling event was completed on March 20, 2019, with laboratory results received and accepted on April 15, 2019.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background values and if one or more of the constituents have been detected at statistically significant levels (SSL) above the Groundwater Protection Standard (GWPS) consistent with the requirements of the Rule. GWPSs for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level, regional screening level, or background concentration.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residuals (CCR) unit (40 CFR §257.93(f)(1-4)). The statistical method used for these evaluations, tolerance limit (TL), was certified by Haley & Aldrich, Inc. on January 14, 2019. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTL), and a minimum 95 percent confidence coefficient and 95 percent coverage. The most recent groundwater sampling event from each compliance well was compared to the corresponding background UTL to determine if an SSI existed.

STATISTICAL EVALUATION

An interwell evaluation was used to determine SSIs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL method was used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a TL is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using the background dataset for all Appendix IV constituents that were detected in the annual assessment monitoring sample event in June 2018 using parametric TLs. If an Appendix IV constituent concentration from the March 2019 sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent will be used to evaluate if an SSI is present. The LCL is the lower end of the confidence interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location (MW-4) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UTL calculation. Per the document, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009,* background concentrations were updated based on statistical evaluation of analytical results collected through September 2018**.**

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the March 2019 semi-annual assessment monitoring event were compared to their respective background UTLs and GWPSs (Table I). A sample concentration greater than the background UTL is considered to represent an SSI. A sample concentration greater than the GWPS is considered to represent an SSL. The results of the groundwater assessment monitoring statistical evaluation are discussed below and provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in March 2019, no SSLs above GWPS occurred at the TEC 322 Landfill.**

Tables:

Table I – Summary of Semi-annual Assessment Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
MARCH 2019 SAMPLING EVENT
TECUMSEH ENERGY CENTER
322 LANDFILL

										MCL Comparison								Inter-well Analysis		Groundwater Protection Standard		
Location Id	Frequency of Detection	Percent Non-Detects	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL § 257.95(h)(2)*	Report Result Unit	Detection Exceedances (Y/N)	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well*	March 2019 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L)[1]	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well	SSL
CCR Appendix-IV: Barium, Total (mg/L)																						
MW-4 (upgradient)	11/11	0%	0.14	0.0001658	0.01288	0.1103	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.094	Y	0.1402		2.0		
MW-1	11/11	0%	0.20	0.003154	0.05616	0.3871	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.066	Y		No		N	No
MW-5	11/11	0%	0.04	0.00004025	0.006345	0.2319	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.018	Y		No		N	No
MW-6	11/11	0%	0.041	0.00005682	0.007538	0.2983	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.016	Y		No		N	No
CCR Appendix-IV: Cobalt, Total (mg/L)																						
MW-4 (upgradient)	0/11	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.0010		0.006		
MW-1	7/11	36%	0.0086	0.000005758	0.0024	0.9294	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0010	N		No		N	No
MW-5	11/11	0%	0.0021	1.245E-07	0.0003529	0.2001	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0014	Y		Yes		N	No
MW-6	11/11	0%	0.0033	4.636E-07	0.0006809	0.2984	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0022	Y		Yes		N	No
CCR Appendix-IV: Fluoride, Total (mg/L)																						
MW-4 (upgradient)	9/12	25%	0.35	0.001588	0.03985	0.1684	4.0	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.240	Y	0.3500		4.0		
MW-1	12/12	0%	0.46	0.001608	0.0401	0.1072	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.38	Y		Yes		N	No
MW-5	11/12	8%	0.42	0.003542	0.05952	0.1973	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.25	Y		No		N	No
MW-6	12/12	0%	0.50	0.004488	0.06699	0.1923	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.30	Y		No		N	No
CCR Appendix-IV: Lithium, Total (mg/L)																						
MW-4 (upgradient)	0/11	100%	-	4.337E-20	2.083E-10	2.083E-08	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040		
MW-1	1/11	91%	0.010	4.337E-20	2.083E-10	2.083E-08	0.040	mg/L	N	0	0	NA	NA	NA	Non-parametric	0.010	N		No		N	No
MW-5	7/11	36%	0.024	0.00003109	0.005576	0.3505	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	N		No		N	No
MW-6	8/11	27%	0.022	0.00002385	0.004884	0.3337	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	Y		No		N	No
CCR Appendix-IV: Radium-226 & 228, Total (pCi/L)																						
MW-4 (upgradient)	11/11	0%	2.641	0.4635	0.6808	0.3955	5	pCi/L	N	0	0	No	No	Stable	Normal	1.85	Y	3.0555		5		
MW-1	11/11	0%	1.78	0.2772	0.5265	0.7093	5	pCi/L	N	0	0	No	No	Stable	Normal	0.253	N		No		N	No
MW-5	11/11	0%	1.48	0.0789	0.2809	0.2563	5	pCi/L	N	0	0	No	No	Stable	Normal	1.36	N		No		N	No
MW-6	11/11	0%	1.95	0.2499	0.4999	0.6012	5	pCi/L	N	0	0	No	No	Stable	Normal	0.931	N		No		N	No

Notes:

[1] Based on baseline data collected from 08/17/2016 through 09/5/2018

** Values obtained from U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations (CFR) § 257.95(h)(2) on December 23, 2020.*

CCR = coal combustion residuals

GWPS = Groundwater Protection Standard

MCL = maximum contaminant level

mg/L = milligrams per Liter

NA = not analyzed

pCi/L = picoCuries per Liter

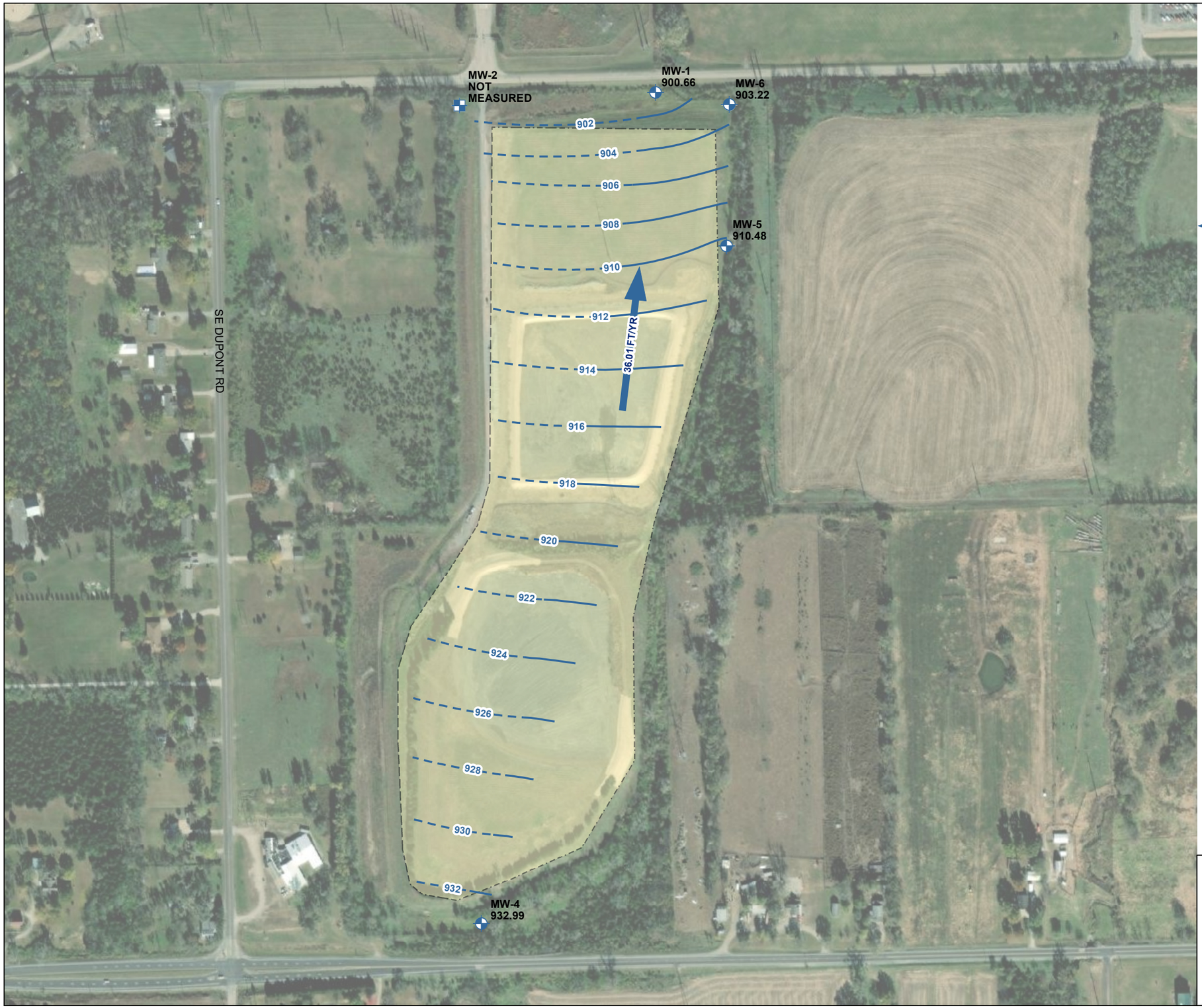
SSI = statistically significant increase

SSL = statistically significant level

UTL = upper tolerance limits

ATTACHMENT 3

Revised Groundwater Potentiometric Maps



LEGEND

- **MW-1 900.47** WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) MARCH 2019
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
- INFERRED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 20 MARCH 2019. GROUNDWATER ELEVATION WAS NOT MEASURED AT MW-2 IN MARCH 2019.

3. AMSL = ABOVE MEAN SEA LEVEL

4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 20, 2019

evergy

MARCH 2022

FIGURE 2

LEGEND

- **MW-1 900.47** WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) JUNE 2019
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
- INFERRED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 26 JUNE 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 26, 2019

evergy

MARCH 2022

FIGURE 3

LEGEND

- **MW-1 900.47** WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) SEPTEMBER 2019
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
- INFERRED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 06 SEPTEMBER 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 06, 2019

evergy

MARCH 2022

FIGURE 4