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2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

BOTTOM ASH SETTLING AREA /BOTTOM ASH LANDFILL
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Evergy Kansas Central, Inc.
Topeka, Kansas

File No. 129778-041
January 2021

Revised: April 2021

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Revision No.	Date	Notes
0	2/1/2021	Original Report
1	4/16/2021	Revised to include groundwater potentiometric elevation contour maps for 2020

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This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Jeffrey Energy Center (JEC) Bottom Ash Settling Area/Bottom Ash Landfill (BASA/BAL) consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2020) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2020 Annual Groundwater Monitoring and Corrective Action Report for the JEC BASA/BAL 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.

Mark Nicholls

Digitally signed by Mark Nicholls
Date: 2021.04.16 14:12:25 -07'00'

1. Introduction

This 2020 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the Bottom Ash Settling Area/Bottom Ash Landfill (BASA/BAL) at the Jeffrey Energy Center (JEC), operated by Evergy Kansas Central, Inc. (Evergy). 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 BASA/BAL consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2020) and documents compliance with the Rule. The specific requirements for the Annual Report listed in § 257.90(e) of the Rule are provided in Sections 1 and 2 of this Annual Report and are in bold italic font, followed by a narrative describing how each Rule requirement has been met.

1.1 40 CFR § 257.90(e)(6) SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

1.1.1 40 CFR § 257.90(e)(6)(i) – Initial Monitoring Program

At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the start of the current annual reporting period (January 1, 2020), the BASA/BAL was operating under a detection monitoring program in compliance with 40 CFR § 257.94.

1.1.2 40 CFR § 257.90(e)(6)(ii) – Final Monitoring Program

At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the end of the current annual reporting period (December 31, 2020), the BASA/BAL was operating under a detection monitoring program in compliance with 40 CFR § 257.94.

1.1.3 40 CFR § 257.90(e)(6)(iii) – Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):

1.1.3.1 40 CFR § 257.90(e)(6)(iii)(a)

Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and

No statistically significant increases (SSI) over background were identified during the previous calendar year (2020).

1.1.3.2 40 CFR § 257.90(e)(6)(iii)(b)

Provide the date when the assessment monitoring program was initiated for the CCR unit.

No SSIs over background were identified during the previous calendar year (2020); therefore, an assessment monitoring program was not initiated for the BASA/BAL in 2020.

1.1.4 40 CFR § 257.90(e)(6)(iv) – Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:

1.1.4.1 40 CFR § 257.90(e)(6)(iv)(A) – Statistically Significant Level Constituents

Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;

The BASA/BAL remains in detection monitoring, and no appendix IV constituents were collected or analyzed in 2020. Therefore, no statistically significant levels above the groundwater protection standard were identified for the BASA/BAL.

1.1.4.2 40 CFR § 257.90(e)(6)(iv)(B) – Initiation of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was initiated for the CCR unit;

No assessment of corrective measures was required to be initiated in 2020 for this unit. The BASA/BAL remained in detection monitoring during 2020.

1.1.4.3 40 CFR § 257.90(e)(6)(iv)(C) – Assessment of Corrective Measures Public Meeting

Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

An assessment of corrective measures was not required for the BASA/BAL in 2020; therefore, a public meeting was not held.

1.1.4.4 40 CFR § 257.90(e)(6)(iv)(D) – Completion of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was completed for the CCR unit.

No assessment of corrective measures was required to be initiated in 2020 for this unit. The BASA/BAL remained in detection monitoring during 2020.

1.1.5 40 CFR § 257.90(e)(6)(v) – Selection of Remedy

Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

The BASA/BAL remains in detection monitoring, and no remedy was required to be selected.

1.1.6 40 CFR § 257.90(e)(6)(vi) – Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

No remedial activities were required in 2020.

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 JEC BASA/BAL. The BASA/BAL is a multi-unit system 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 JEC BASA/BAL 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 is provided in this report. This Annual Report documents the applicable groundwater-related activities completed in the calendar year 2020.

2.2.1 Status of the Groundwater Monitoring Program

The BASA/BAL remained in the detection monitoring program during 2020.

2.2.2 Key Actions Completed

The 2019 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2020. Statistical evaluation was completed in January 2020 on analytical data from the September 2019 detection monitoring sampling event. Semi-annual detection monitoring

events were completed in March and September of 2020. Statistical evaluation was completed in July 2020 on analytical data from the March 2020 semi-annual detection monitoring sampling event. Statistical evaluation of the results from the September 2020 semi-annual detection monitoring sampling event are due to be completed in January 2021 and will be reported in the next annual report.

2.2.3 Problems Encountered

One problem encountered during groundwater monitoring activities in 2020 consisted of a laboratory analytical error that required re-sampling of MW-BAA-3. Well MW-BAA-3 was resampled in June 2020 due to a suspected erroneous calcium reading in the March 2020 semi-annual detection monitoring sampling event at JEC BASA/BAL. This was the only issue that needed to be addressed at the BASA/BAL in 2020.

2.2.4 Actions to Resolve Problems

In June 2020, an additional sample was collected at monitoring well MW-BAA-3 to verify the calcium concentration identified during the March 2020 detection monitoring sampling event. The calcium result was not confirmed, and the calcium concentration for the March 2020 detection monitoring sampling event was revised accordingly. No other problems were encountered at the BASA/BAL in 2020; therefore, no actions to resolve problems were required.

2.2.5 Project Key Activities for Upcoming Year

Key activities planned for 2021 include completion of the 2020 Annual Groundwater Monitoring and Corrective Action Report, statistical evaluation of semi-annual detection monitoring analytical data collected in September 2020, and semi-annual detection monitoring and subsequent statistical evaluations.

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 BASA/BAL 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 in 2020.

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 § 257.94(b), two independent detection monitoring samples from each background and downgradient monitoring well were collected during 2020. A summary including the sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the BASA/BAL is presented in Table I of this report. Groundwater potentiometric elevation contour maps associated with each groundwater monitoring sampling event in 2020 are provided in Figures 2 and 3.

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

There was no transition between monitoring programs in 2020. Only detection monitoring was conducted in 2020.

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 § 257.94 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 the activities completed in calendar year 2020.

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.

No alternate source demonstration or certification was required in 2020; therefore, no 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).

The BASA/BAL remains in detection monitoring and 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).

The BASA/BAL remains in detection monitoring, and no assessment monitoring samples were collected or analyzed in 2020. Consequently, Evergy is not required to establish groundwater protection standards for this CCR unit, and this criterion is not applicable.

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 2020. The BASA/BAL remained in detection monitoring during 2020.

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 of corrective measures was required to be initiated in 2020; therefore, no demonstration or certification is applicable for this unit.

TABLE

TABLE I
SUMMARY OF ANALYTICAL RESULTS - 2020 DETECTION MONITORING
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL
ST. MARYS, KANSAS

Location	Upgradient			Downgradient							
	MW-BAA-6			MW-BAA-2		MW-BAA-3			MW-BAA-7		
Measure Point (TOC)	1301.81			1226.56		1222.00			1213.15		
Sample Name	BAA-06-030720	BAA-06-091420	DUP-BAA-091420	BAA-02-030620	BAA-02-091420	BAA-03-030720	MW-BAA-03-061120	BAA-03-091420	BAA-07-030620	DUP-BAA-030620	BAA-07-091420
Sample Date	03/07/2020	9/14/2020	9/14/2020	03/06/2020	9/14/2020	03/07/2020	6/11/2020*	9/14/2020	03/06/2020	03/06/2020	9/14/2020
Final Lab Report Date	3/18/2020	9/25/2020	9/25/2020	3/18/2020	9/25/2020	3/18/2020	6/16/2020	9/25/2020	3/18/2020	3/18/2020	9/25/2020
Final Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	6/24/2020	N/A	N/A	N/A	N/A
Final Radiation Lab Report Date	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 Revision Date	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	4/20/2020	10/21/2020	10/21/2020	4/20/2020	10/21/2020	4/20/2020	7/1/2020	10/21/2020	4/20/2020	4/20/2020	10/21/2020
Depth to Water (ft btoc)	77.73	80.90	--	14.34	14.97	13.25	12.41	14.29	18.94	-	19.65
Temperature (Deg C)	10.09	18.12	--	10.99	18.63	7.70	16.83	16.48	9.49	-	17.88
Conductivity, Field (µS/cm)	4074	3950	--	1242	1210	3665	3560	3240	2381	-	2150
Turbidity, Field (NTU)	0.53	0.0	--	0.78	0.00	0.61	0.0	0.0	0.53	-	5.7
Boron, Total (mg/L)	**4.1**	**4.2**	**4.1**	**0.96**	**1.1**	**2.3**	-	**2.3**	**0.60**	**0.59**	**0.55**
Calcium, Total (mg/L)	**548**	**532**	**544**	**153**	**168**	**559**	**543**	**532**	**214**	**207**	**208**
Chloride (mg/L)	**250**	**290**	**224**	**62.8**	**106**	**163**	-	**150**	**200**	**202**	**188**
Fluoride (mg/L)	**0.32**	<0.20	<0.20	**0.52**	**0.58**	**0.69**	-	< 0.20	**0.65**	**0.60**	**0.74**
Sulfate (mg/L)	**1890**	**2060**	**1980**	**320**	**536**	**1910**	-	**2050**	**836**	**973**	**910**
pH (lab) (su)	**7.0**	**6.9**	**6.9**	**7.4**	**7.2**	**7.1**	-	**7.1**	**7.5**	**7.4**	**7.3**
TDS (mg/L)	**3670**	**3360**	**3370**	**975**	**1000**	**3610**	-	**3130**	**1790**	**1840**	**1660**

Notes and Abbreviations:

Bold value: *Detection above laboratory reporting limit.*

Data presented in this table were verified against the laboratory and validation reports.

** = Resample*

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

su = standard unit

TDS = total dissolved solids

TOC = top of casing

FIGURES

LEGEND

- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
4. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

BOTTOM ASH SETTLING AREA/ BOTTOM ASH LANDFILL MONITORING WELL LOCATION MAP

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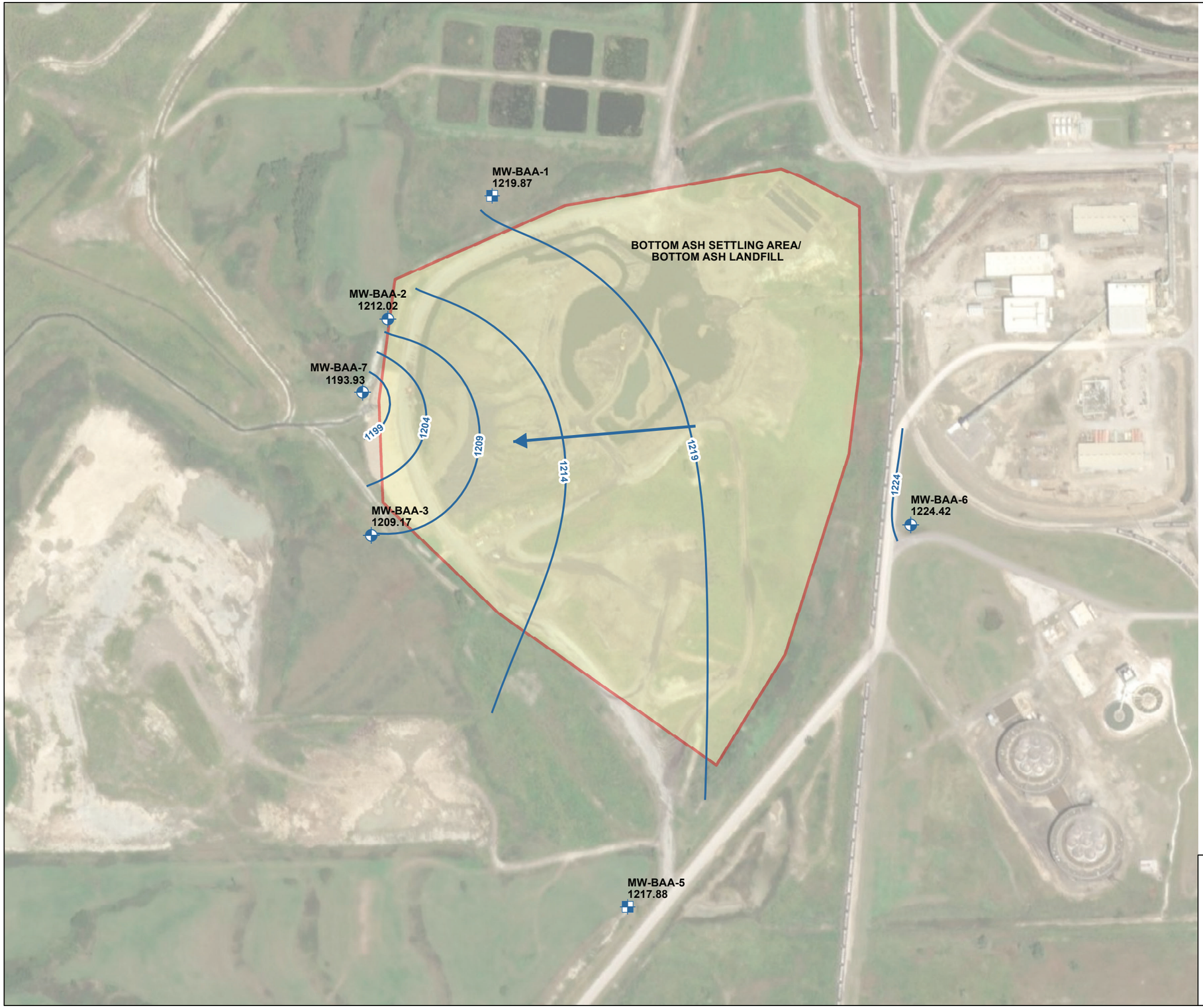
APRIL 2021

FIGURE 1



LEGEND

MW-BAA-1 1219.84	WELL NAME AND GROUNDWATER ELEVATION (MARCH 2020)
	MONITORING WELL
	PIEZOMETER OBSERVATION ONLY
	GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL)
	GROUNDWATER FLOW DIRECTION
	BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 03 MARCH 2020.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 300 600
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 3, 2020

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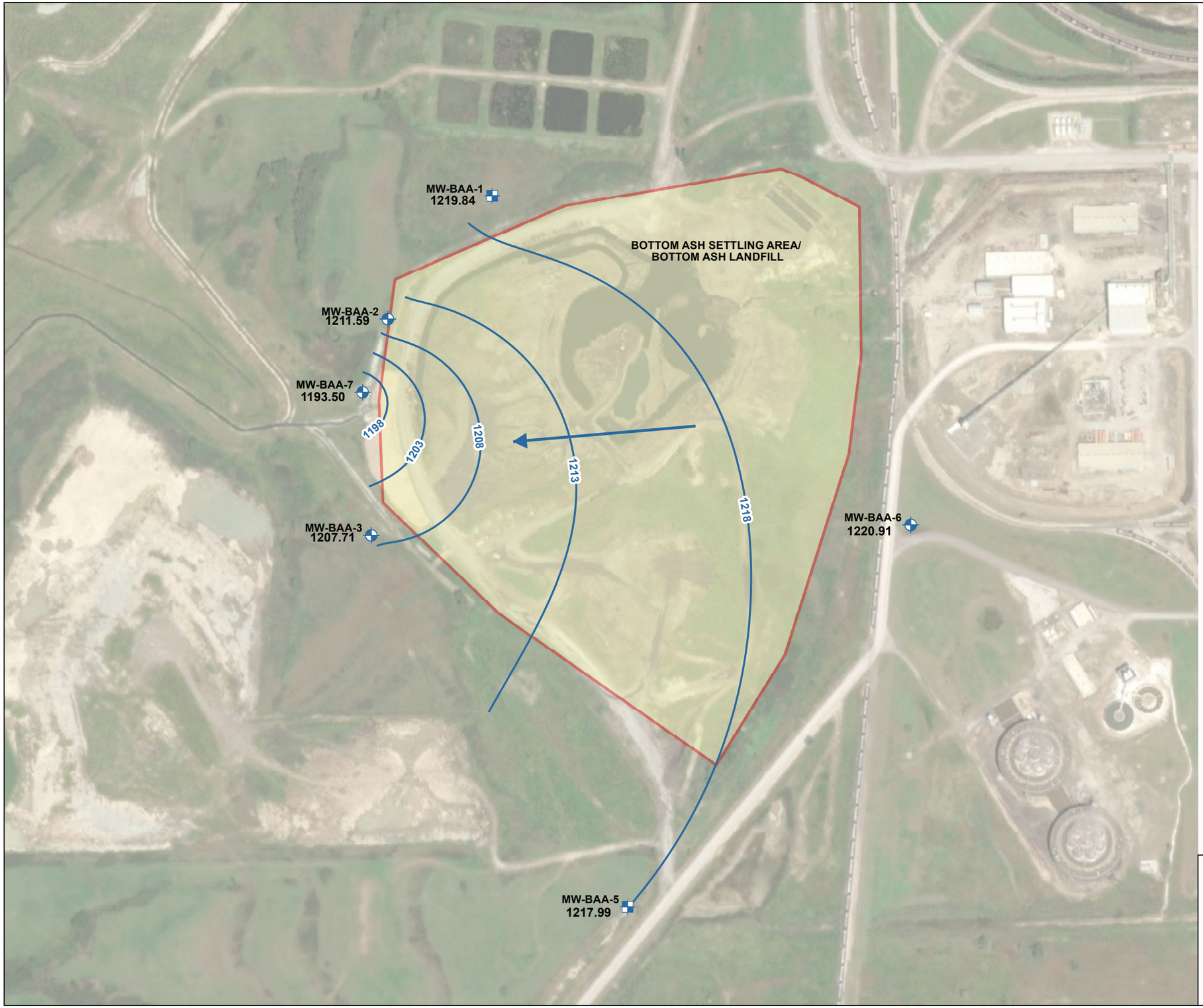
APRIL 2021

FIGURE 2



LEGEND

MW-BAA-1
1219.84 WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 2020)

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL)

GROUNDWATER FLOW DIRECTION

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 14 SEPTEMBER 2020.

3. AMSL = ABOVE MEAN SEA LEVEL

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 300 600
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 14, 2020

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APRIL 2021

FIGURE 3

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

November 3, 2022
Project No. 0204993-000

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

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

Mark Nicholls
Digitally signed by Mark Nicholls
Date: 2022.11.03 12:41:12 -07'00'

SUBJECT: 2020 Annual Groundwater Monitoring and Corrective Action Report Addendum
Evergy Kansas Central, Inc.
Jeffrey Energy Center
Bottom Ash Settling Area/Bottom Ash Landfill

The Evergy Kansas Central, Inc. (Evergy) Bottom Ash Settling Area/Bottom Ash Landfill (BASA/BAL) at the Jeffrey Energy Center is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) §257.90 through §257.98 (Rule). An Annual Groundwater Monitoring and Corrective Action (GWMCA) Report documenting the activities completed in 2020 for the BASA/BAL was completed and placed in the facility's operating record on February 1, 2021, as required by the Rule, with a revision finalized on April 16, 2021. 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 Report, 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 2020 sampling events are included in Attachment 1, and a discussion of the applicable statistical analyses completed in 2020 are included in Attachment 2 of this addendum. Revision 1 of the 2020 GWMCA Report does include a "Groundwater Potentiometric Elevation Contour Map" for each of the 2020 sampling events as Figures 2

and 3. 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 (Attachment 3).

The Attachments to this addendum are described below:

- Attachment 1 – Laboratory Analytical Reports: Includes laboratory data packages with supporting information such as case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation. The laboratory data packages for the sampling events completed in March and September 2020 are provided.
  - An additional sample for calcium was collected in June 2020 for monitoring well MW-BAA-3 due to a suspected erroneous calcium reading during the March 2020 semi-annual detection monitoring sampling event. The result was revised accordingly.
- 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 2020. Statistical analyses completed in 2020 included:
  - Overview of the January 2020 statistical analyses for data obtained in the September 2019 sampling event; and
  - Overview of the July 2020 statistical analyses for data obtained in the March 2020 sampling event.
- Attachment 3 – 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 and September 2020 are provided.

ATTACHMENT 1
Laboratory Analytical Reports

ATTACHMENT 1-1
March 2020 Sampling Event
Laboratory Analytical Report

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

March 18, 2020

Melissa Michels
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Dear Melissa Michels:
Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2020. 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,

Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Bob Beck, Evergy
Sarah Hazelwood, Evergy, Inc.
Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Melanie Satanek, Haley & Aldrich, Inc.
JD Schlegel, Evergy, Inc.
Brandon Will, Evergy, Inc.
Danielle Zinmaster, Haley & Aldrich

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CERTIFICATIONS

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Pace Analytical Services Kansas
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 #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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SAMPLE SUMMARY

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60331204001	**BAA-02-030620**	Water	03/06/20 10:00	03/09/20 15:55
60331204002	**BAA-07-030620**	Water	03/06/20 11:00	03/09/20 15:55
60331204003	**DUP-BAA-030620**	Water	03/06/20 11:10	03/09/20 15:55
60331204004	**BAA-03-030720**	Water	03/07/20 08:00	03/09/20 15:55
60331204005	**BAA-06-030720**	Water	03/07/20 09:20	03/09/20 15:55

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SAMPLE ANALYTE COUNT

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60331204001	**BAA-02-030620**	EPA 200.7	JDE	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331204002	**BAA-07-030620**	EPA 200.7	JDE	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331204003	**DUP-BAA-030620**	EPA 200.7	JDE	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331204004	**BAA-03-030720**	EPA 200.7	JDE	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331204005	**BAA-06-030720**	EPA 200.7	JDE	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K

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PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: March 18, 2020

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: 643489

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60331200001,60331202002

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

- MS (Lab ID: 2614744)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: Evergy Kansas Central, Inc.
Date: March 18, 2020

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:

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PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: Evergy Kansas Central, Inc.
Date: March 18, 2020

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

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

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- BAA-02-030620 (Lab ID: 60331204001)
- BAA-03-030720 (Lab ID: 60331204004)
- BAA-06-030720 (Lab ID: 60331204005)
- BAA-07-030620 (Lab ID: 60331204002)
- DUP-BAA-030620 (Lab ID: 60331204003)

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:

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PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Evergy Kansas Central, Inc.
Date: March 18, 2020

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:

Analyte Comments:

QC Batch: 643013

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2613021)
  - Sulfate
- MSD (Lab ID: 2613022)
  - Sulfate

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

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Sample: BAA-02-030620 **Lab ID: 60331204001** Collected: 03/06/20 10:00 Received: 03/09/20 15:55 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							
Boron, Total Recoverable	**0.96**	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:18	7440-42-8	
Calcium, Total Recoverable	**153**	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:18	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**975**	mg/L	10.0	1		03/12/20 08:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/11/20 10:11		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**62.8**	mg/L	10.0	10		03/12/20 00:25	16887-00-6	
Fluoride	**0.52**	mg/L	0.20	1		03/12/20 18:59	16984-48-8	
Sulfate	**320**	mg/L	50.0	50		03/12/20 00:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Sample: BAA-07-030620 **Lab ID: 60331204002** Collected: 03/06/20 11:00 Received: 03/09/20 15:55 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							
Boron, Total Recoverable	**0.60**	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:20	7440-42-8	
Calcium, Total Recoverable	**214**	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:20	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1790**	mg/L	20.0	1		03/12/20 08:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/11/20 10:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**200**	mg/L	50.0	50		03/12/20 02:01	16887-00-6	
Fluoride	**0.65**	mg/L	0.20	1		03/12/20 19:15	16984-48-8	
Sulfate	**836**	mg/L	50.0	50		03/12/20 02:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Sample: DUP-BAA-030620 **Lab ID: 60331204003** Collected: 03/06/20 11:10 Received: 03/09/20 15:55 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							
Boron, Total Recoverable	**0.59**	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:22	7440-42-8	
Calcium, Total Recoverable	**207**	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:22	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1840**	mg/L	20.0	1		03/12/20 08:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/11/20 10:14		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**202**	mg/L	50.0	50		03/11/20 15:07	16887-00-6	
Fluoride	**0.60**	mg/L	0.20	1		03/11/20 13:40	16984-48-8	
Sulfate	**973**	mg/L	50.0	50		03/11/20 15:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Sample: BAA-03-030720 **Lab ID: 60331204004** Collected: 03/07/20 08:00 Received: 03/09/20 15:55 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							
Boron, Total Recoverable	**2.3**	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:25	7440-42-8	
Calcium, Total Recoverable	**559**	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:25	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3610**	mg/L	66.7	1		03/12/20 08:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		03/11/20 10:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**163**	mg/L	10.0	10		03/11/20 16:49	16887-00-6	
Fluoride	**0.69**	mg/L	0.20	1		03/11/20 16:35	16984-48-8	
Sulfate	**1910**	mg/L	200	200		03/12/20 11:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

Sample: BAA-06-030720 **Lab ID: 60331204005** Collected: 03/07/20 09:20 Received: 03/09/20 15:55 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							
Boron, Total Recoverable	**4.1**	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:27	7440-42-8	
Calcium, Total Recoverable	**548**	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:27	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3670**	mg/L	66.7	1		03/12/20 08:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		03/11/20 10:17		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**250**	mg/L	50.0	50		03/11/20 17:33	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		03/11/20 17:04	16984-48-8	
Sulfate	**1890**	mg/L	200	200		03/12/20 11:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

QC Batch: 643489 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60331204001, 60331204002, 60331204003, 60331204004, 60331204005

METHOD BLANK: 2614740 Matrix: Water
Associated Lab Samples: 60331204001, 60331204002, 60331204003, 60331204004, 60331204005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	mg/L	<0.10	0.10	03/13/20 14:44	
Calcium	mg/L	<0.20	0.20	03/13/20 14:44	

LABORATORY CONTROL SAMPLE: 2614741

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1	1.0	100	85-115	
Calcium	mg/L	10	10.6	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2614742 2614743

Parameter	Units	60331200001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/L	0.40	1	1	1.4	1.4	103	103	70-130	0	20	
Calcium	mg/L	170	10	10	177	180	74	98	70-130	1	20	

MATRIX SPIKE SAMPLE: 2614744

Parameter	Units	60331202002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	10	1	11.2	126	70-130	
Calcium	mg/L	2470	10	2580	1100	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

QC Batch: 643322 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60331204001, 60331204002, 60331204003, 60331204004, 60331204005

METHOD BLANK: 2614071 Matrix: Water
Associated Lab Samples: 60331204001, 60331204002, 60331204003, 60331204004, 60331204005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/12/20 08:43	

LABORATORY CONTROL SAMPLE: 2614072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2614073

Parameter	Units	60331204001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	975	954	2	10	

SAMPLE DUPLICATE: 2614074

Parameter	Units	60331202001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	118000	122000	3	10	

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QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

QC Batch: 643011 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60331204001, 60331204002, 60331204003, 60331204004, 60331204005

SAMPLE DUPLICATE: 2613018

Parameter	Units	60330920001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.5	5	5	H6

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QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

QC Batch: 643009 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60331204001, 60331204002

METHOD BLANK: 2613009 Matrix: Water
Associated Lab Samples: 60331204001, 60331204002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/11/20 07:17	
Fluoride	mg/L	<0.20	0.20	03/11/20 07:17	
Sulfate	mg/L	<1.0	1.0	03/11/20 07:17	

METHOD BLANK: 2614249 Matrix: Water
Associated Lab Samples: 60331204001, 60331204002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/12/20 12:41	
Fluoride	mg/L	<0.20	0.20	03/12/20 12:41	
Sulfate	mg/L	<1.0	1.0	03/12/20 12:41	

METHOD BLANK: 2618823 Matrix: Water
Associated Lab Samples: 60331204001, 60331204002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/18/20 07:11	
Fluoride	mg/L	<0.20	0.20	03/18/20 07:11	
Sulfate	mg/L	<1.0	1.0	03/18/20 07:11	

LABORATORY CONTROL SAMPLE: 2613010

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.3	90	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 2614250

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

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QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60331204

LABORATORY CONTROL SAMPLE: 2618824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2613011 2613012

Parameter	Units	60331012002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	20.9J	250	250	253	251	93	92	80-120	1	15	
Fluoride	mg/L	4.8J	125	125	120	119	92	91	80-120	1	15	
Sulfate	mg/L	624	250	250	891	871	107	99	80-120	2	15	

MATRIX SPIKE SAMPLE: 2613013

Parameter	Units	60330969002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20.7J	250	247	91	80-120	
Fluoride	mg/L	4.9J	125	119	92	80-120	
Sulfate	mg/L	618	250	878	104	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: JEC BASA/BAL CCR
Pace Project No.: 60331204

QC Batch: 643013 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60331204003, 60331204004, 60331204005

METHOD BLANK: 2613019 Matrix: Water
Associated Lab Samples: 60331204003, 60331204004, 60331204005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/11/20 12:03	
Fluoride	mg/L	<0.20	0.20	03/11/20 12:03	
Sulfate	mg/L	<1.0	1.0	03/11/20 12:03	

METHOD BLANK: 2614190 Matrix: Water
Associated Lab Samples: 60331204003, 60331204004, 60331204005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/12/20 07:31	
Fluoride	mg/L	<0.20	0.20	03/12/20 07:31	
Sulfate	mg/L	<1.0	1.0	03/12/20 07:31	

LABORATORY CONTROL SAMPLE: 2613020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

LABORATORY CONTROL SAMPLE: 2614191

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2613021 2613022

Parameter	Units	60331204003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	202	250	250	441	445	95	97	80-120	1	15	
Fluoride	mg/L	0.60	2.5	2.5	3.4	3.5	112	115	80-120	2	15	
Sulfate	mg/L	973	250	250	1200	1210	91	95	80-120	1	15	E

Results presented on 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: JEC BASA/BAL CCR
Pace Project No.: 60331204

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

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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: JEC BASA/BAL CCR
Pace Project No.: 60331204

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60331204001	**BAA-02-030620**	EPA 200.7	643489	EPA 200.7	643583
60331204002	**BAA-07-030620**	EPA 200.7	643489	EPA 200.7	643583
60331204003	**DUP-BAA-030620**	EPA 200.7	643489	EPA 200.7	643583
60331204004	**BAA-03-030720**	EPA 200.7	643489	EPA 200.7	643583
60331204005	**BAA-06-030720**	EPA 200.7	643489	EPA 200.7	643583
60331204001	**BAA-02-030620**	SM 2540C	643322		
60331204002	**BAA-07-030620**	SM 2540C	643322		
60331204003	**DUP-BAA-030620**	SM 2540C	643322		
60331204004	**BAA-03-030720**	SM 2540C	643322		
60331204005	**BAA-06-030720**	SM 2540C	643322		
60331204001	**BAA-02-030620**	SM 4500-H+B	643011		
60331204002	**BAA-07-030620**	SM 4500-H+B	643011		
60331204003	**DUP-BAA-030620**	SM 4500-H+B	643011		
60331204004	**BAA-03-030720**	SM 4500-H+B	643011		
60331204005	**BAA-06-030720**	SM 4500-H+B	643011		
60331204001	**BAA-02-030620**	EPA 300.0	643009		
60331204002	**BAA-07-030620**	EPA 300.0	643009		
60331204003	**DUP-BAA-030620**	EPA 300.0	643013		
60331204004	**BAA-03-030720**	EPA 300.0	643013		
60331204005	**BAA-06-030720**	EPA 300.0	643013		

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Sample Condition Upon Receipt

WO# : 60331204

60331204

Client Name: 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 3.2 Corr. Factor 0.1 Corrected 3.5

Date and initials of person examining contents: 03/16/26 BP

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) Lot # 403173	☑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: _____

F-KS-C-003-Rev.11, February 28, 2018

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a L[illegible] DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:

Company:	EVERGY KANSAS CENTRAL, INC.
Address:	Jeffrey Energy Center (JEC)
	818 Kansas Ave, Topeka, KS 66612
Email To:	melissa.michels@evergy.com
Phone: 785-575-8113	Fax:
Requested Due Date/TAT:	7 day

Section B Required Project Information:

Report To:	Melissa Michels
Copy To:	Jared Morrison, Jake Humphrey, Laura Hines
	Brandon Will, Sarah Hazelwood, JD Schlegel, Melanie Satanek, Danielle Zinmaster, Samantha
Purchase Order No.:	10JEC-0000047747
Project Name:	JEC BASA/BAL CCR
Project Number:	129778-036

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	EVERGY KANSAS CENTRAL, INC
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Jasmine Amerin, 913-563-1403
Pace Profile #:	9657, 4

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	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*	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAA-02-030620	WT		03/06	1000				3	X		X						X	X	X	X		60331204
2	BAA-07-030620	"		"	1100				"	X		X						X	X	X	X		
3	Dup-BAA-030620	"		"	1110				"	X		X						X	X	X	X		
4	BAA-03-030720	"		03/07	800				"	X		X						X	X	X	X		
5	BAA-06-030720	"		03/07	920				"	X		X						X	X	X	X		
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*: B, Ca	Eli Fredrickson H&A	03/09	1300		3-9	1336	
					3/9/20	1555	3.4 Y Y Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: Eli Fredrickson DATE Signed (MM/DD/YY): 03/09/20

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

*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

June 24, 2020

Melissa Michels
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

Dear Melissa Michels:

Enclosed are the analytical results for sample(s) received by the laboratory on June 12, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

Revised Report REV_1

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

Sincerely,

Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Sarah Hazelwood, Evergy, Inc.
Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Dustin Kadous, Evergy Kansas Central, Inc. Jeffrey Energy Center
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Melanie Satanek, Haley & Aldrich, Inc.
JD Schlegel, Evergy, Inc.
Danielle Zinmaster, Haley & Aldrich

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

CERTIFICATIONS

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
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: JEC BASA/BAL CCR
Pace Project No.: 60339925

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60339925001	**MW-BAA-3-061120**	Water	06/11/20 10:50	06/12/20 17:00

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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60339925001	**MW-BAA-3-061120**	EPA 200.7	JDE	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

Date: June 24, 2020

Amended report revised to include rerun results.

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

PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: June 24, 2020

General Information:
1 sample was analyzed for EPA 200.7 by Pace Analytical Services Kansas City. 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.

Duplicate Sample:
All duplicate sample results were within method 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
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(913)599-5665

ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

Sample: MW-BAA-3-061120 **Lab ID: 60339925001** Collected: 06/11/20 10:50 Received: 06/12/20 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 Pace Analytical Services - Kansas City							
Calcium, Total Recoverable	**543000**	ug/L	200	1	06/23/20 13:16	06/24/20 14:57	7440-70-2	M1

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

QC Batch: 661528
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60339925001

METHOD BLANK: 2681820 Matrix: Water
Associated Lab Samples: 60339925001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	<200	200	06/24/20 13:38	

LABORATORY CONTROL SAMPLE: 2681821

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2681822 2681823

Parameter	Units	60338382018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	126000	10000	10000	136000	135000	97	91	70-130	0	20	

SAMPLE DUPLICATE: 2683650

Parameter	Units	60339925001 Result	Dup Result	RPD	Max RPD	Qualifiers
Calcium	ug/L	543000	531000	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

QUALIFIERS

Project: JEC BASA/BAL CCR
Pace Project No.: 60339925

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.

ANALYTE QUALIFIERS

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: JEC BASA/BAL CCR
Pace Project No.: 60339925

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60339925001	**MW-BAA-3-061120**	EPA 200.7	661528	EPA 200.7	661701

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Sample Condition Upon Receipt

WO# : 60339925

60339925

Client Name: Evergy Kansas

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 ☑ zplc

Thermometer Used: T-301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 2.3 Corr. Factor -0.4 Corrected 1.9

Date and initials of person examining contents: 6.12.20 HS

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	2 Day
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) LOT#603296	☑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
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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:	EVERGY KANSAS CENTRAL, INC.	Report To:	Melissa Michels	Attention:	Accounts Payable
Address:	Jeffrey Energy Center (JEC)	Copy To:	Jared Morrison, Jake Humphrey, Laura Hines	Company Name:	EVERGY KANSAS CENTRAL, INC
	818 Kansas Ave, Topeka, KS 66612		Brandon Will, Sarah Hazelwood, JD Schlegel, Melanie Satonek, Danielle Zimmster, Samantha	Address:	See Section A
Email To:	melissa.michels@evergy.com	Purchase Order No.:	WSTR-10JEC47747	Pace Quote Reference:	
Phone:	785-575-8113 Fax:	Project Name:	JEC BASA/BAL CCR	Pace Project Manager:	Jasmine Amerin, 913-563-1403
Requested Due Date/TAT:	Rush - 2 day TAT	Project Number:		Pace Profile #:	9657, 2

REGULATORY AGENCY

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

Site Location STATE: KS

Requested Analysis Filtered (Y/N)

ITEM #	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	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	200.7 Total Metals*	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-BAA-3-061120		WT	G	-	-	06/11/20	10:50		2			2							X						40339925
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*: Ca	Jason R. Franks / SCS	6/12/20	17:00	[signature] / Pace	6.12.20	1700	1.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jason R. Franks

SIGNATURE of SAMPLER: Jason R. Franks DATE Signed (MM/DD/YY): 6/12/20

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.

ATTACHMENT 1-2
September 2020 Sampling Event
Laboratory Analytical Report

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

September 25, 2020

Melissa Michels
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Dear Melissa Michels:

Enclosed are the analytical results for sample(s) received by the laboratory on September 15, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

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

Sincerely,

Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Sarah Hazelwood, Evergy, Inc.
Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Dustin Kadous, Evergy Kansas Central, Inc. Jeffrey Energy Center
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Melanie Satanek, Haley & Aldrich, Inc.
JD Schlegel, Evergy, Inc.
Danielle Zinmaster, Haley & Aldrich

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

CERTIFICATIONS

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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(913)599-5665

SAMPLE SUMMARY

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60348453001	**BAA-06-091420**	Water	09/14/20 17:26	09/15/20 17:20
60348453002	**BAA-02-091420**	Water	09/14/20 18:01	09/15/20 17:20
60348453003	**BAA-03-091420**	Water	09/14/20 18:48	09/15/20 17:20
60348453004	**BAA-07-091420**	Water	09/14/20 18:35	09/15/20 17:20
60348453005	**DUP-BAA-091420**	Water	09/14/20 17:31	09/15/20 17:20

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SAMPLE ANALYTE COUNT

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60348453001	**BAA-06-091420**	EPA 200.7	TDS	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348453002	**BAA-02-091420**	EPA 200.7	TDS	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348453003	**BAA-03-091420**	EPA 200.7	TDS	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348453004	**BAA-07-091420**	EPA 200.7	TDS	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348453005	**DUP-BAA-091420**	EPA 200.7	TDS	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: September 25, 2020

General Information:
5 samples were analyzed for EPA 200.7 by Pace Analytical Services Kansas City. 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: 678442

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60348450001,60348453005

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

- MS (Lab ID: 2743247)
  - Calcium
- MSD (Lab ID: 2743246)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: Evergy Kansas Central, Inc.
Date: September 25, 2020

General Information:
5 samples were analyzed for SM 2540C by Pace Analytical Services Kansas City. 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
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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: Evergy Kansas Central, Inc.
Date: September 25, 2020

General Information:
5 samples were analyzed for SM 4500-H+B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- BAA-02-091420 (Lab ID: 60348453002)
- BAA-03-091420 (Lab ID: 60348453003)
- BAA-06-091420 (Lab ID: 60348453001)
- BAA-07-091420 (Lab ID: 60348453004)
- DUP-BAA-091420 (Lab ID: 60348453005)

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:

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Evergy Kansas Central, Inc.
Date: September 25, 2020

General Information:
5 samples were analyzed for EPA 300.0 by Pace Analytical Services Kansas City. 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: 677618

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60348173006,60348450002

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

- MS (Lab ID: 2739938)
  - Sulfate

Additional Comments:

Analyte Comments:

QC Batch: 677618

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2739938)
  - Sulfate

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

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Sample: BAA-06-091420 **Lab ID: 60348453001** Collected: 09/14/20 17:26 Received: 09/15/20 17:20 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 Pace Analytical Services - Kansas City							
Boron, Total Recoverable	**4.2**	mg/L	0.10	1	09/23/20 14:11	09/24/20 15:59	7440-42-8	
Calcium, Total Recoverable	**532**	mg/L	0.20	1	09/23/20 14:11	09/24/20 15:59	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3360**	mg/L	66.7	1		09/17/20 13:03		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		09/19/20 10:54		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City							
Chloride	**290**	mg/L	20.0	20		09/18/20 20:50	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/18/20 20:05	16984-48-8	
Sulfate	**2060**	mg/L	200	200		09/19/20 14:22	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Sample: BAA-02-091420 **Lab ID: 60348453002** Collected: 09/14/20 18:01 Received: 09/15/20 17:20 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 Pace Analytical Services - Kansas City							
Boron, Total Recoverable	**1.1**	mg/L	0.10	1	09/23/20 14:11	09/24/20 16:02	7440-42-8	
Calcium, Total Recoverable	**168**	mg/L	0.20	1	09/23/20 14:11	09/24/20 16:02	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1000**	mg/L	13.3	1		09/17/20 13:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/19/20 11:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City							
Chloride	**106**	mg/L	20.0	20		09/18/20 21:19	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	1		09/18/20 21:04	16984-48-8	
Sulfate	**536**	mg/L	50.0	50		09/19/20 14:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Sample: BAA-03-091420 **Lab ID: 60348453003** Collected: 09/14/20 18:48 Received: 09/15/20 17:20 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 Pace Analytical Services - Kansas City							
Boron, Total Recoverable	**2.3**	mg/L	0.10	1	09/23/20 14:11	09/24/20 16:04	7440-42-8	
Calcium, Total Recoverable	**532**	mg/L	0.20	1	09/23/20 14:11	09/24/20 16:04	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3130**	mg/L	40.0	1		09/18/20 14:01		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		09/19/20 11:05		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City							
Chloride	**150**	mg/L	20.0	20		09/18/20 21:49	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/18/20 21:34	16984-48-8	
Sulfate	**2050**	mg/L	200	200		09/19/20 14:52	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Sample: BAA-07-091420 **Lab ID: 60348453004** Collected: 09/14/20 18:35 Received: 09/15/20 17:20 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 Pace Analytical Services - Kansas City							
Boron, Total Recoverable	**0.55**	mg/L	0.10	1	09/23/20 14:11	09/24/20 16:07	7440-42-8	
Calcium, Total Recoverable	**208**	mg/L	0.20	1	09/23/20 14:11	09/24/20 16:07	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1660**	mg/L	20.0	1		09/18/20 14:01		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/19/20 11:04		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City							
Chloride	**188**	mg/L	20.0	20		09/18/20 22:18	16887-00-6	
Fluoride	**0.74**	mg/L	0.20	1		09/18/20 22:03	16984-48-8	
Sulfate	**910**	mg/L	100	100		09/19/20 15:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

Sample: DUP-BAA-091420 **Lab ID: 60348453005** Collected: 09/14/20 17:31 Received: 09/15/20 17:20 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 Pace Analytical Services - Kansas City							
Boron, Total Recoverable	**4.1**	mg/L	0.10	1	09/23/20 14:11	09/24/20 16:10	7440-42-8	
Calcium, Total Recoverable	**544**	mg/L	0.20	1	09/23/20 14:11	09/24/20 16:10	7440-70-2	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3370**	mg/L	66.7	1		09/18/20 14:01		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		09/19/20 10:57		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City							
Chloride	**224**	mg/L	20.0	20		09/18/20 22:48	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/18/20 22:33	16984-48-8	
Sulfate	**1980**	mg/L	200	200		09/19/20 15:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

QC Batch: 678442
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348453001, 60348453002, 60348453003, 60348453004, 60348453005

METHOD BLANK: 2743243 Matrix: Water
Associated Lab Samples: 60348453001, 60348453002, 60348453003, 60348453004, 60348453005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	mg/L	<0.10	0.10	09/24/20 15:29	
Calcium	mg/L	<0.20	0.20	09/24/20 15:29	

LABORATORY CONTROL SAMPLE: 2743244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1	1.0	103	85-115	
Calcium	mg/L	10	10.1	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2743245 2743246

Parameter	Units	60348450001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/L	0.40	1	1	1.5	1.4	108	102	70-130	4	20	
Calcium	mg/L	171	10	10	180	172	92	12	70-130	5	20	M1

MATRIX SPIKE SAMPLE: 2743247

Parameter	Units	60348453005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	4.1	1	5.0	88	70-130	
Calcium	mg/L	544	10	538	-63	70-130	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
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

QC Batch: 677406
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348453001, 60348453002

METHOD BLANK: 2738915 Matrix: Water
Associated Lab Samples: 60348453001, 60348453002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/17/20 13:01	

LABORATORY CONTROL SAMPLE: 2738916

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

SAMPLE DUPLICATE: 2738917

Parameter	Units	60348435002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2640	2520	4	10	

SAMPLE DUPLICATE: 2738918

Parameter	Units	60348450001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	876	880	0	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

QC Batch: 677688
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348453003, 60348453004, 60348453005

METHOD BLANK: 2740170 Matrix: Water
Associated Lab Samples: 60348453003, 60348453004, 60348453005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/18/20 14:00	

LABORATORY CONTROL SAMPLE: 2740171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2740172

Parameter	Units	60348453003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3130	3260	4	10	

SAMPLE DUPLICATE: 2740173

Parameter	Units	60348528003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	995	1010	1	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC BASA/BAL CCR
Pace Project No.: 60348453

QC Batch: 677706
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348453001, 60348453002, 60348453003, 60348453004, 60348453005

SAMPLE DUPLICATE: 2740238

Parameter	Units	60348453001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	7.0	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: JEC BASA/BAL CCR
Pace Project No.: 60348453

QC Batch: 677618
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348453001, 60348453002, 60348453003, 60348453004, 60348453005

METHOD BLANK: 2739934 Matrix: Water
Associated Lab Samples: 60348453001, 60348453002, 60348453003, 60348453004, 60348453005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/18/20 07:52	
Fluoride	mg/L	<0.20	0.20	09/18/20 07:52	
Sulfate	mg/L	<1.0	1.0	09/18/20 07:52	

METHOD BLANK: 2741284 Matrix: Water
Associated Lab Samples: 60348453001, 60348453002, 60348453003, 60348453004, 60348453005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/19/20 08:27	
Fluoride	mg/L	<0.20	0.20	09/19/20 08:27	
Sulfate	mg/L	<1.0	1.0	09/19/20 08:27	

LABORATORY CONTROL SAMPLE: 2739935

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

LABORATORY CONTROL SAMPLE: 2741285

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.3	105	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	5.3	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2739936 2739937

Parameter	Units	60348173006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	125	100	100	221	227	96	102	80-120	2	15	
Fluoride	mg/L	ND	50	50	52.0	55.4	97	104	80-120	6	15	
Sulfate	mg/L	ND	100	100	116	122	98	103	80-120	5	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: JEC BASA/BAL CCR
Pace Project No.: 60348453

MATRIX SPIKE SAMPLE: 2739938

Parameter	Units	60348450002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	94.2	100	183	89	80-120	
Fluoride	mg/L	0.41	2.5	2.7	91	80-120	
Sulfate	mg/L	473	250	1030	222	80-120	E,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: JEC BASA/BAL CCR
Pace Project No.: 60348453

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.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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: JEC BASA/BAL CCR
Pace Project No.: 60348453

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60348453001	**BAA-06-091420**	EPA 200.7	678442	EPA 200.7	678676
60348453002	**BAA-02-091420**	EPA 200.7	678442	EPA 200.7	678676
60348453003	**BAA-03-091420**	EPA 200.7	678442	EPA 200.7	678676
60348453004	**BAA-07-091420**	EPA 200.7	678442	EPA 200.7	678676
60348453005	**DUP-BAA-091420**	EPA 200.7	678442	EPA 200.7	678676
60348453001	**BAA-06-091420**	SM 2540C	677406		
60348453002	**BAA-02-091420**	SM 2540C	677406		
60348453003	**BAA-03-091420**	SM 2540C	677688		
60348453004	**BAA-07-091420**	SM 2540C	677688		
60348453005	**DUP-BAA-091420**	SM 2540C	677688		
60348453001	**BAA-06-091420**	SM 4500-H+B	677706		
60348453002	**BAA-02-091420**	SM 4500-H+B	677706		
60348453003	**BAA-03-091420**	SM 4500-H+B	677706		
60348453004	**BAA-07-091420**	SM 4500-H+B	677706		
60348453005	**DUP-BAA-091420**	SM 4500-H+B	677706		
60348453001	**BAA-06-091420**	EPA 300.0	677618		
60348453002	**BAA-02-091420**	EPA 300.0	677618		
60348453003	**BAA-03-091420**	EPA 300.0	677618		
60348453004	**BAA-07-091420**	EPA 300.0	677618		
60348453005	**DUP-BAA-091420**	EPA 300.0	677618		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60348453

60348453

Client Name: Evergy Kansas Central, Inc.

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 ☒ ZIPLOC

Thermometer Used: T301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 5.3, 1.0, 5.2 Corr. Factor +0.5 Corrected 5.8, 2.1, 5.7

Date and initials of person examining contents: 09/16/20 MC

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: WW	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 1003173	☑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.

Section A Required Client Information:

Company:	EVERGY KANSAS CENTRAL, INC.
Address:	Jeffrey Energy Center (JEC)
	818 Kansas Ave, Topeka, KS 66612
Email To:	melissa.michels@evergy.com
Phone: 785-575-8113	Fax:
Requested Due Date/TAT:	7 day

Section B Required Project Information:

Report To:	Melissa Michels, Jared Morrison, Jake Humphrey
Copy To:	Laura Hines, Brandon Will, Sarah Hazelwood
	JD Schlegel, Melanie Satanek, Danielle Zinmaster, Samantha Kaney
Purchase Order No.:	10JEC-0000047747
Project Name:	JEC BASA/BAL CCR
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	EVERGY KANSAS CENTRAL, INC
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Jasmine Amerin, 913-563-1403
Pace Profile #:	9657, 4

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	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*	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAA-06-091420	WT	G	-	-	09/14/20	17:26		3	2		1						X	X	X	X		60348453
2	BAA-02-091420	WT	G	-	-	09/14/20	18:01		3	2		1						X	X	X	X		
3	BAA-03-091420	WT	G	-	-	09/14/20	18:48		3	2		1						X	X	X	X		
4	BAA-07-091420	WT	G	-	-	09/14/20	18:35		3	2		1						X	X	X	X		
5	DUP-BAA-091420	WT	G	-	-	09/14/20	17:31		3	2		1						X	X	X	X		
6																							
7																							
8																							
9																							
10																							
11																							
12																							

Requested Analysis Filtered (Y/N)

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	Jason R. Franks / SCS	9/15/20	17:00	MWeller/Pace	9/16/20	1720	5.8	Y	Y	Y
							2.1			
							5.7			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jason R. Franks

SIGNATURE of SAMPLER: Jason R. Franks

DATE Signed (MM/DD/YY): 9/15/20

*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.

ATTACHMENT 2
Statistical Analyses

ATTACHMENT 2-1
September 2019 Statistical Analyses

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

TECHNICAL MEMORANDUM

November 3, 2022
File No. 129778

TO: Evergy Kansas Central, 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 2019 Semi-Annual Groundwater Detection Monitoring Data
Statistical Evaluation
Completed January 20, 2020
Jeffrey Energy Center
Bottom Ash Settling Area/Bottom Ash Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.94 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **September 2019** semi-annual detection monitoring groundwater sampling event for the Jeffrey Energy Center (JEC) Bottom Ash Settling Area/Bottom Ash Landfill (BASA/BAL). This semi-annual detection monitoring groundwater sampling event was completed on **September 12 and 13**, **2019,** with laboratory results received and accepted on **October 22, 2019**.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix III groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background or upgradient wells consistent with the requirements in 40 CFR § 257.94.

Statistical Evaluation of Appendix III Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residual (CCR) unit (40 CFR § 257.93(f)(1-4)). The two statistical methods used for these evaluations, prediction limits (PLs) and Parametric Analysis of Variance, were certified by Haley & Aldrich, Inc. on April 17, 2019. The PL method, as determined applicable for this sampling event, was used to evaluate potential SSIs above background. Background levels for each constituent listed in Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids) were computed as upper prediction limits (UPL), considering one future observation, and a minimum 95 percent

confidence coefficient. The most recent groundwater sampling event from each compliance well was compared to the corresponding background PL to determine if an SSI existed.

STATISTICAL EVALUATION

An interwell evaluation using the PL method was used to complete the statistical evaluation of the referenced dataset. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data (MW-BAA-6). A PL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a specified confidence level (e.g., 95 percent). The upper endpoint of a concentration limit is called the UPL. Depending on the background data distribution, parametric or non-parametric PL procedures are used to evaluate groundwater monitoring data using this method. Parametric PLs 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 PL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UPL.

The statistical evaluation was conducted using the background dataset for all Appendix III constituents. The UPLs 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-BAA-6) were combined to calculate the UPL for each Appendix III constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UPL 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 2019**.

RESULTS OF APPENDIX III DOWNGRADIENT STATISTICAL COMPARISONS

Sample concentrations from the downgradient wells for each of the Appendix III constituents from the **September 2019** semi-annual detection monitoring sampling event were compared to their respective background UPLs (Table I). A sample concentration greater than the background UPL is considered to represent an SSI. The results of the groundwater assessment monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in September 2019, no SSIs above background PLs occurred at the JEC BASA/BAL.**

Enclosures:
Table I – Summary of Semi-Annual Detection Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL DETECTION GROUNDWATER MONITORING STATISTICAL EVALUATION
SEPTEMBER 2019 SAMPLING EVENT
JEFFREY ENERGY CENTER BOTTOM ASH SETTLING AREA/BOTTOM ASH LANDFILL
ST. MARYS, KANSAS

													Interwell Analysis	
Location Id	**Frequency of Detection**	**Percent Non-Detects**	**Range of Non-Detect**	**Maximum Detect**	**Variance**	**Standard Deviation**	**Coefficient of Variance**	**Outlier Presence**	**Outlier Removed**	**Trend**	**Distribution Well**	**September 2019 Concentration (mg/L)**	**Background Limits[1] (UPL) mg/L**	**SSI**
	CCR Appendix-III: Boron, Total (mg/L)													
MW-BAA-6 (upgradient)	12/12	0%	-	5.92	2.205	1.485	0.3971	No	No	Stable			10.44	
MW-BAA-2	12/12	0%	-	1.38	0.03786	0.1946	0.18	No	No	Stable	Normal	1.3		No
MW-BAA-3	12/12	0%	-	2.4	0.007988	0.08937	0.0396	No	No	Stable	Normal	2.2		No
MW-BAA-7	12/12	0%	-	1.3	0.0785	0.2802	0.2681	No	No	Stable	Non-parametric	0.60		No
	CCR Appendix-III: Calcium, Total (mg/L)													
MW-BAA-6 (upgradient)	12/12	0%	-	551	3735	61.11	0.1254	Yes	No	Stable			551	
MW-BAA-2	12/12	0%	-	224	585.2	24.19	0.1326	No	No	Stable	Normal	188		No
MW-BAA-3	12/12	0%	-	539	623.3	24.97	0.04902	No	No	Stable	Normal	488		No
MW-BAA-7	12/12	0%	-	260	315.5	17.76	0.07777	No	No	Decreasing	Normal	209		No
	CCR Appendix-III: Chloride (mg/L)													
MW-BAA-6 (upgradient)	12/12	0%	-	314	1840	42.9	0.185	Yes	No	Stable			426	
MW-BAA-2	12/12	0%	-	220	1820	42.66	0.3102	No	No	Increase	Normal	173		No
MW-BAA-3	12/12	0%	-	179	88.99	9.434	0.0593	Yes	No	Stable	Normal	179		No
MW-BAA-7	12/12	0%	-	211	848.8	29.13	0.155	No	No	Increase	Non-parametric	199		No
	CCR Appendix-III: Fluoride (mg/L)													
MW-BAA-6 (upgradient)	11/12	8%	0.2-0.2	0.88	0.0376	0.1939	0.3296	No	No	Stable			1.464	
MW-BAA-2	12/12	0%	-	0.63	0.003661	0.0605	0.1156	No	No	Stable	Normal	0.49		No
MW-BAA-3	12/12	0%	-	1.5	0.03486	0.1867	0.1935	Yes	No	Stable	Non-parametric	0.98		No
MW-BAA-7	12/12	0%	-	0.9	0.005588	0.07475	0.09666	No	No	Stable	Normal	0.67		No
	CCR Appendix-III: pH (lab) (SU)													
MW-BAA-6 (upgradient)	12/12	0%	-	7.3	0.02061	0.1435	0.02031	No	No	Stable			7.76	
MW-BAA-2	12/12	0%	-	8.5	0.1109	0.333	0.0444	Yes	No	Stable	Non-parametric	7.6		No
MW-BAA-3	12/12	0%	-	7.6	0.0297	0.1723	0.02405	Yes	No	Stable	Normal	7.2		No
MW-BAA-7	12/12	0%	-	7.5	0.01	0.1	0.01361	Yes	No	Stable	Normal	7.4		No
	CCR Appendix-III: Sulfate (mg/L)													
MW-BAA-6 (upgradient)	12/12	0%	-	2190	127200	356.6	0.2003	Yes	No	Stable			3391	
MW-BAA-2	12/12	0%	-	983	31030	176.2	0.2527	No	No	Stable	Normal	751		No
MW-BAA-3	12/12	0%	-	2290	13440	115.9	0.05676	Yes	No	Stable	Normal	1950		No
MW-BAA-7	12/12	0%	-	958	679.4	26.06	0.02832	No	No	Stable	Normal	958		No
	CCR Appendix-III: Total Dissolved Solids (TDS) (mg/L)													
MW-BAA-6 (upgradient)	12/12	0%	-	3630	174800	418.1	0.1322	Yes	No	Stable			5050	
MW-BAA-2	12/12	0%	-	1790	47440	217.8	0.1644	No	No	Stable	Normal	1450		No
MW-BAA-3	12/12	0%	-	3780	62190	249.4	0.07568	No	No	Stable	Normal	3780		No
MW-BAA-7	12/12	0%	-	1990	6481	80.51	0.04425	Yes	No	Stable	Normal	1990		No

Notes and Abbreviations:

[1] Based on background data collected from 08/25/2016 through 09/12/2019.
CCR = coal combustion residual
mg/L = milligrams per liter
SSI = statistically significant increase
SU = standard unit
UPL = upper prediction limit

ATTACHMENT 2-2
March 2020 Statistical Analysis

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

TECHNICAL MEMORANDUM

November 3, 2022
File No. 129778

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

FROM: Haley & Aldrich, Inc.
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SUBJECT: March 2020 Semi-annual Groundwater Detection Monitoring Data
Statistical Evaluation
Completed July 14, 2020
Jeffrey Energy Center
Bottom Ash Settling Area/Bottom Ash Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.94 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **March 2020** semi-annual detection monitoring groundwater sampling event for the Jeffrey Energy Center (JEC) Bottom Ash Settling Area/Bottom Ash Landfill (BASA/BAL). This semi-annual detection monitoring groundwater sampling event was completed on **March 6 and 7, 2020,** with laboratory results received and accepted on **April 20, 2020**.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix III groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background or upgradient wells consistent with the requirements in 40 CFR § 257.94.

Statistical Evaluation of Appendix III Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residual (CCR) unit (40 CFR § 257.93(f)(1-4)). The two statistical methods used for these evaluations, prediction limits (PLs) and Parametric Analysis of Variance, were certified by Haley & Aldrich, Inc. on April 17, 2019. The PL method, as determined applicable for this sampling event, was used to evaluate potential SSIs above background. Background levels for each constituent listed in Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids) were computed as upper prediction limits (UPLs), considering one future observation, and a minimum 95 percent

confidence coefficient. The most recent groundwater sampling event from each compliance well was compared to the corresponding background PL to determine if an SSI existed.

STATISTICAL EVALUATION

An interwell evaluation using the PL method was used to complete the statistical evaluation of the referenced dataset. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data (MW-BAA-6). A PL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a specified confidence level (e.g., 95 percent). The upper endpoint of a concentration limit is called the UPL. Depending on the background data distribution, parametric or non-parametric PL procedures are used to evaluate groundwater monitoring data using this method. Parametric PLs 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 PL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UPL.

The statistical evaluation was conducted using the background dataset for all Appendix III constituents. The UPLs 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-BAA-6) were combined to calculate the UPL for each Appendix III constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UPL 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 2019**.

RESULTS OF APPENDIX III DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the Appendix III constituents from the **March 2020** semi-annual detection monitoring sampling event were compared to their respective background UPLs (Table I). A sample concentration greater than the background UPL is considered to represent an SSI. 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 2020, no SSIs above background PLs occurred at the JEC BASA/BAL.**

Enclosures:
Table I – Summary of Semi-Annual Detection Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL DETECTION GROUNDWATER MONITORING STATISTICAL EVALUATION
MARCH 2020 SAMPLING EVENT
JEFFREY ENERGY CENTER BOTTOM ASH SETTLING AREA/BOTTOM ASH LANDFILL
ST. MARYS, KANSAS

												Interwell Analysis	
Location Id	**Frequency of Detection**	**Percent Non-Detects**	**Range of Non-Detect**	**Maximum Detect**	**Variance**	**Standard Deviation**	**Coefficient of Variance**	**Outlier Presence**	**Outlier Removed**	**Trend**	**Distribution Well**	**March 2020 Concentration (mg/L)**	**Background Limits[1] (UPL) mg/L**	**SSI**
	CCR Appendix-III: Boron, Total (mg/L)													
MW-BAA-6	13/13	0%	-	5.92	2.031	1.425	0.3783	No	No	Stable			10.44	
MW-BAA-2	13/13	0%	-	1.38	0.03583	0.1893	0.1767	No	No	Stable	Normal	0.96		No
MW-BAA-3	13/13	0%	-	2.4	0.007467	0.08641	0.03823	No	No	Stable	Normal	2.3		No
MW-BAA-7	13/13	0%	-	1.3	0.08721	0.2953	0.2921	No	No	Stable	Normal	0.60		No
	CCR Appendix-III: Calcium, Total (mg/L)													
MW-BAA-6	13/13	0%	-	551	3708	60.89	0.1238	Yes	No	Stable			551	
MW-BAA-2	13/13	0%	-	224	603	24.56	0.1363	No	No	Stable	Normal	153		No
MW-BAA-3	13/13	0%	-	559	761.1	27.59	0.05376	No	No	Stable	Normal	543		No
MW-BAA-7	13/13	0%	-	260	305.2	17.47	0.07686	No	No	Decreasing	Normal	214		No
	CCR Appendix-III: Chloride (mg/L)													
MW-BAA-6	13/13	0%	-	314	1712	41.38	0.1773	Yes	No	Stable			426	
MW-BAA-2	13/13	0%	-	220	2098	45.8	0.3476	No	No	Stable	Normal	62.8		No
MW-BAA-3	13/13	0%	-	179	82.76	9.097	0.05708	Yes	No	Increase	Normal	163		No
MW-BAA-7	13/13	0%	-	211	789.3	28.09	0.1487	Yes	No	Increase	Non-parametric	200		No
	CCR Appendix-III: Fluoride (mg/L)													
MW-BAA-6	12/13	8%	0.2-0.2	0.88	0.04	0.2	0.3523	No	No	Stable			1.464	
MW-BAA-2	13/13	0%	-	0.63	0.003356	0.05793	0.1108	No	No	Stable	Normal	0.52		No
MW-BAA-3	13/13	0%	-	1	0.01228	0.1108	0.1254	Yes	No	Stable	Normal	0.69		No
MW-BAA-7	13/13	0%	-	0.9	0.006292	0.07932	0.1038	No	No	Stable	Normal	0.65		No
	CCR Appendix-III: pH (lab) (SU)													
MW-BAA-6	13/13	0%	-	7.3	0.01923	0.1387	0.01964	No	No	Stable			7.76	
MW-BAA-2	13/13	0%	-	8.5	0.1024	0.3201	0.04272	Yes	No	Stable	Non-parametric	7.4		No
MW-BAA-3	13/13	0%	-	7.6	0.02756	0.166	0.02318	Yes	No	Stable	Normal	7.1		No
MW-BAA-7	13/13	0%	-	7.5	0.0109	0.1044	0.01418	Yes	No	Stable	Normal	7.5		No
	CCR Appendix-III: Sulfate (mg/L)													
MW-BAA-6	13/13	0%	-	2190	117500	342.8	0.1916	Yes	No	Stable			3391	
MW-BAA-2	13/13	0%	-	983	39380	198.4	0.2971	No	No	Stable	Normal	320		No
MW-BAA-3	13/13	0%	-	2290	13670	116.9	0.05753	No	No	Stable	Normal	1910		No
MW-BAA-7	13/13	0%	-	958	1172	34.23	0.03746	Yes	No	Stable	Normal	836		No
	CCR Appendix-III: Total Dissolved Solids (TDS) (mg/L)													
MW-BAA-6	13/13	0%	-	3670	180100	424.3	0.1325	Yes	No	Stable			5050	
MW-BAA-2	13/13	0%	-	1790	52910	230	0.1772	No	No	Stable	Normal	975		No
MW-BAA-3	13/13	0%	-	3780	64640	254.2	0.0766	No	No	Stable	Normal	3610		No
MW-BAA-7	13/13	0%	-	1990	6006	77.5	0.04266	Yes	No	Stable	Normal	1790		No

Notes and Abbreviations:

[1] Based on background data collected from 08/25/2016 through 09/12/2019.
CCR = coal combustion residual
mg/L = milligrams per liter
SSI = statistically significant increase
SU = standard unit
UPL = upper prediction limit

ATTACHMENT 3
Groundwater Potentiometric Maps

LEGEND

MW-BAA-1
1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), MARCH 2020

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL), DASHED WHERE INFERRED

GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 03 MARCH 2020.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 03 MARCH 2020 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 300 600
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 3, 2020

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NOVEMBER 2022

FIGURE 2

LEGEND

MW-BAA-1 1219.84 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), SEPTEMBER 2020

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-FT INTERVAL (AMSL), DASHED WHERE INFERRED

GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 14 SEPTEMBER 2020.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 14 SEPTEMBER 2020 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

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ST. MARY'S, KANSAS

BOTTOM ASH SETTLING AREA / BOTTOM ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 14, 2020

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NOVEMBER 2022

FIGURE 3