HALEY ALDRICH

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2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
847 LANDFILL
LAWRENCE ENERGY CENTER
LAWRENCE, 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
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 Lawrence Energy Center (LEC) 847 Landfill 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 LEC 847 Landfill is, to the best of my knowledge, accurate and complete.

Signed:_____
Professional Geologist

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

Mark Nicholls

Digitally signed by Mark Nicholls
Date: 2021.04.16 14:10:49 -07'00'

1. Introduction

This 2020 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the 847 Landfill (also known as Ash Landfill 847) at the Lawrence Energy Center (LEC), 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 847 Landfill 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 short 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 847 Landfill 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 847 Landfill 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 847 Landfill 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 847 Landfill 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 847 Landfill.

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 847 Landfill 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 847 Landfill 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 847 Landfill 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 847 Landfill 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 LEC 847 Landfill. The 847 Landfill is subject to the groundwater monitoring and corrective action requirements described under 40 CFR §§ 257.90 through 257.98. This document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e).

2.2 40 CFR § 257.90(e) – SUMMARY

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

This Annual Report describes monitoring completed and actions taken for the groundwater monitoring system at the LEC 847 Landfill as required by the Rule. Groundwater sampling and analysis was conducted in accordance with requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 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 847 Landfill 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 semi-annual detection monitoring sampling event. Semi-annual detection

monitoring events were completed in March and September 2020. Statistical evaluation was completed in July 2020 on analytical data from the March 2020 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 laboratory analytical errors that required the laboratory to reanalyze select analytical results. Chloride results were reanalyzed for MW-35 and MW-31R for the September 2020 semi-annual detection monitoring sampling event due to elevated laboratory reporting limits related to an elevated dilution factor. This was the only issue that needed to be addressed at the 847 Landfill in 2020.

2.2.4 Actions to Resolve Problems

The resolution to problems encountered in 2020 included additional laboratory analyses as described above. The analytical results were revised accordingly. No other problems were encountered at the 847 Landfill 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 847 Landfill is included in this report as Figure 1.

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

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

No monitoring wells were installed or decommissioned during 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 847 Landfill 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 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 847 Landfill 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 847 Landfill 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 847 Landfill 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.
LAWRENCE ENERGY CENTER
847 LANDFILL
LAWRENCE, KANSAS

Location	Upgradient				Downgradient							
	MW-32		MW-35		MW-31R			MW-33			MW-34	
Measure Point (TOC)	861.96		862.52		857.67			855.44			871.96	
Sample Name	MW-32-031020	MW-32-091520	MW-35-031020	MW-35-091520	MW-31R-031020	MW-31R-091520	DUP-LF-091520	MW-33-031020	DUP-031020	MW-33-091520	MW-34-031020	MW-34-091520
Sample Date	03/10/2020	9/15/2020	03/10/2020	9/15/2020	03/10/2020	9/15/2020	9/15/2020	03/10/2020	03/10/2020	9/15/2020	03/10/2020	9/15/2020
Final Lab Report Date	3/19/2020	9/25/2020	3/19/2020	9/25/2020	3/19/2020	9/25/2020	9/25/2020	3/19/2020	3/19/2020	9/25/2020	3/19/2020	9/25/2020
Final Lab Report Revision Date	N/A	9/28/2020	N/A	9/28/2020	N/A	9/28/2020	9/28/2020	N/A	N/A	9/28/2020	N/A	9/28/2020
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	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	N/A
Lab Data Reviewed and Accepted	4/18/2020	10/23/2020	4/18/2020	10/23/2020	4/18/2020	10/23/2020	10/23/2020	4/18/2020	4/18/2020	10/23/2020	4/18/2020	10/23/2020
Depth to Water (ft btoc)	44.35	45.00	46.67	47.31	40.43	41.30	-	38.11	-	38.92	54.44	55.27
Temperature (Deg C)	9.64	16.09	10.29	15.80	8.95	16.36	-	8.83	-	16.95	8.14	16.57
Conductivity, Field (µS/cm)	731	885	30870	36500	9306	11800	-	16670	-	19700	15180	17800
Turbidity, Field (NTU)	0.52	0.0	0.44	0.0	0.43	0.0	-	0.85	-	0.0	0.65	0.0
Boron, Total (mg/L)	**0.18**	**0.19**	**1.87**	**2.0**	**0.719**	**0.75**	**0.76**	**1.56**	**1.58**	**1.6**	**2.08**	**2.2**
Calcium, Total (mg/L)	**59.4**	**60.4**	**518**	**525**	**264**	**253**	**256**	**252**	**255**	**246**	**210**	**203**
Chloride (mg/L)	**101**	**93.7**	**16200**	**14900**	**4150**	**4840**	**5830**	**6580**	**6650**	**6960**	**5800**	**6340**
Fluoride (mg/L)	**0.27**	**0.38**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	**0.36**	< 0.20
Sulfate (mg/L)	**5.9**	**6.0**	**666**	**615**	**187**	**187**	**198**	**316**	**338**	**277**	**535**	**449**
pH (lab) (su)	**7.6**	**7.6**	**7.4**	**7.2**	**7.4**	**7.2**	**7.2**	**7.8**	**7.7**	**7.4**	**7.4**	**7.6**
TDS (mg/L)	**498**	**517**	**24900**	**25200**	**8050**	**8420**	**8520**	**13600**	**12800**	**12900**	**11300**	**11400**

Notes and Abbreviations:

Bold value: *Detection above laboratory reporting limit.*
Data presented in this table were verified against the laboratory and validation reports.
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
- WATER QUALITY ONLY
- FUTURE 847 LANDFILL DISPOSAL
- 847 LANDFILL AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
4. AERIAL IMAGERY SOURCE: ESRI, APRIL 17, 2018

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

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

847 LANDFILL MONITORING WELL LOCATION MAP

evergy

APRIL 2021

FIGURE 1

LEGEND

- **MW-32 817.60** — WELL NAME AND GROUNDWATER ELEVATION (MARCH 2020)
- MONITORING WELL
- WATER QUALITY ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 0.25-FT INTERVAL (AMSL)
- SITE GROUNDWATER FLOW DIRECTION
- 847 LANDFILL
- FUTURE 847 LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 10 MARCH 2020.
3. MW-35 WAS NOT INCLUDED IN THE DATA SET TO CREATE GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION LINES.
4. AMSL = ABOVE MEAN SEA LEVEL
5. AERIAL IMAGERY SOURCE: ESRI, 17 APRIL 2018

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

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

847 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 10, 2020

evergy

APRIL 2021

FIGURE 2

LEGEND

MW-32 817.60 WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 2020)

MONITORING WELL

WATER QUALITY ONLY

GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 0.25-FT INTERVAL (AMSL)

SITE GROUNDWATER FLOW DIRECTION

847 LANDFILL

FUTURE 847 LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 14 SEPTEMBER 2020.
3. MW-35 WAS NOT INCLUDED IN THE DATA SET TO CREATE GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION LINES.
4. AMSL = ABOVE MEAN SEA LEVEL
5. AERIAL IMAGERY SOURCE: ESRI, 17 APRIL 2018

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

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

847 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 14, 2020

evergy

APRIL 2021

FIGURE 3

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

October 7, 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: 2022.10.07 14:31:17 -07'00'

SUBJECT: 2020 Annual Groundwater Monitoring and Corrective Action Report Addendum
Evergy Kansas Central, Inc.
847 Landfill
Lawrence Energy Center – Lawrence, Kansas

The Evergy Kansas Central, Inc. (Evergy) 847 Landfill at the Lawrence 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 847 Landfill was completed and placed in the facility's operating record on January 31, 2021, as required by the Rule. The Annual GWMCA Report contained the specific information listed in 40 CFR §257.90(e).

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

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

While this information is not specifically referred to in 40 CFR §257.90(e) for inclusion in the GWMCA 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. For each of the 2020 sampling events, the measured groundwater elevations, with calculated groundwater flow rates and directions, have been included in Attachment 3.

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

- Attachment 1 – Laboratory Analytical Reports: Includes laboratory data packages with supporting information such as case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation. The laboratory data packages for the sampling events completed in March and September 2020 are provided.
- Attachment 2 – Statistical Analyses: Includes a discussion of the statistical analyses utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against Groundwater Protection Standards), and supporting backup for statistical analyses completed in 2020. Statistical analyses completed in 2020 included:
  - Overview of the January 2020 statistical analysis for data obtained in the September 2019 sampling event; and
  - Overview of the July 2020 statistical analysis 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 19, 2020

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

RE: Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Dear Melissa Michels:
Enclosed are the analytical results for sample(s) received by the laboratory on March 11, 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
Andrew Hare, Evergy, Inc.
Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Tabitha Hylton, KCP&L & Westar, Evergy Companies
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Melanie Satanek, Haley & Aldrich, Inc.
Danielle Zinmaster, Haley & Aldrich

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

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: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60331438001	**MW-34-031020**	Water	03/10/20 09:40	03/11/20 14:20
60331438002	**MW-33-031020**	Water	03/10/20 10:45	03/11/20 14:20
60331438003	**DUP-031020**	Water	03/10/20 10:55	03/11/20 14:20
60331438004	**MW-31R-031020**	Water	03/10/20 12:05	03/11/20 14:20
60331438005	**MW-32-031020**	Water	03/10/20 13:00	03/11/20 14:20
60331438006	**MW-35-031020**	Water	03/10/20 13:50	03/11/20 14:20

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SAMPLE ANALYTE COUNT

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60331438001	**MW-34-031020**	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
60331438002	**MW-33-031020**	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, CNB	3	PASI-K
60331438003	**DUP-031020**	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
60331438004	**MW-31R-031020**	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
60331438005	**MW-32-031020**	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, CNB	3	PASI-K
60331438006	**MW-35-031020**	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, CNB	3	PASI-K

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Sample: MW-34-031020 **Lab ID: 60331438001** Collected: 03/10/20 09:40 Received: 03/11/20 14:20 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							
Boron, Total Recoverable	**2080**	ug/L	100	1	03/17/20 15:59	03/18/20 15:11	7440-42-8	
Calcium, Total Recoverable	**210000**	ug/L	200	1	03/17/20 15:59	03/18/20 15:11	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**11300**	mg/L	333	1		03/12/20 14:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/17/20 16:14		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**5800**	mg/L	1000	1000		03/13/20 16:04	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		03/12/20 23:29	16984-48-8	
Sulfate	**535**	mg/L	50.0	50		03/12/20 23:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Sample: MW-33-031020 **Lab ID: 60331438002** Collected: 03/10/20 10:45 Received: 03/11/20 14:20 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							
Boron, Total Recoverable	**1560**	ug/L	100	1	03/17/20 15:59	03/18/20 15:14	7440-42-8	
Calcium, Total Recoverable	**252000**	ug/L	200	1	03/17/20 15:59	03/18/20 15:14	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**13600**	mg/L	500	1		03/12/20 14:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		03/18/20 14:08		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**6580**	mg/L	1000	1000		03/13/20 16:20	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		03/13/20 01:12	16984-48-8	
Sulfate	**316**	mg/L	50.0	50		03/13/20 00:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Sample: DUP-031020 **Lab ID: 60331438003** Collected: 03/10/20 10:55 Received: 03/11/20 14:20 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							
Boron, Total Recoverable	**1580**	ug/L	100	1	03/17/20 15:59	03/18/20 15:16	7440-42-8	
Calcium, Total Recoverable	**255000**	ug/L	200	1	03/17/20 15:59	03/18/20 15:16	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**12800**	mg/L	500	1		03/12/20 14:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.7**	Std. Units	0.10	1		03/18/20 14:11		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**6650**	mg/L	1000	1000		03/13/20 16:36	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		03/13/20 01:26	16984-48-8	
Sulfate	**338**	mg/L	50.0	50		03/13/20 01:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Sample: MW-31R-031020 **Lab ID: 60331438004** Collected: 03/10/20 12:05 Received: 03/11/20 14:20 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							
Boron, Total Recoverable	**719**	ug/L	100	1	03/17/20 15:59	03/18/20 15:23	7440-42-8	
Calcium, Total Recoverable	**264000**	ug/L	1000	5	03/17/20 15:59	03/18/20 15:39	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**8050**	mg/L	250	1		03/12/20 14:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/18/20 14:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**4150**	mg/L	1000	1000		03/13/20 16:52	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		03/13/20 02:10	16984-48-8	
Sulfate	**187**	mg/L	10.0	10		03/13/20 02:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Sample: MW-32-031020 **Lab ID: 60331438005** Collected: 03/10/20 13:00 Received: 03/11/20 14:20 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							
Boron, Total Recoverable	**180**	ug/L	100	1	03/17/20 15:59	03/18/20 15:25	7440-42-8	
Calcium, Total Recoverable	**59400**	ug/L	200	1	03/17/20 15:59	03/18/20 15:25	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**498**	mg/L	10.0	1		03/12/20 14:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/18/20 14:17		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**101**	mg/L	10.0	10		03/13/20 13:24	16887-00-6	
Fluoride	**0.27**	mg/L	0.20	1		03/12/20 10:20	16984-48-8	
Sulfate	**5.9**	mg/L	1.0	1		03/12/20 10:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Sample: MW-35-031020 **Lab ID: 60331438006** Collected: 03/10/20 13:50 Received: 03/11/20 14:20 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							
Boron, Total Recoverable	**1870**	ug/L	1000	10	03/17/20 15:59	03/18/20 15:41	7440-42-8	
Calcium, Total Recoverable	**518000**	ug/L	200	1	03/17/20 15:59	03/18/20 15:27	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**24900**	mg/L	1000	1		03/12/20 14:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/18/20 14:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**16200**	mg/L	5000	5000		03/13/20 14:37	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		03/12/20 12:27	16984-48-8	
Sulfate	**666**	mg/L	50.0	50		03/12/20 12:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

QC Batch: 644386 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004, 60331438005, 60331438006

METHOD BLANK: 2618357 Matrix: Water
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004, 60331438005, 60331438006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<100	100	03/18/20 14:41	
Calcium	ug/L	<200	200	03/18/20 14:41	

LABORATORY CONTROL SAMPLE: 2618358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	960	96	85-115	
Calcium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2618359 2618360

Parameter	Units	60331435003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1770	1000	1000	2740	2700	98	94	70-130	2	20	
Calcium	ug/L	562000	10000	10000	576000	558000	138	-43	70-130	3	20	M1

MATRIX SPIKE SAMPLE: 2618361

Parameter	Units	60331435007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	4930	1000	5730	80	70-130	
Calcium	ug/L	464000	10000	462000	-20	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

QC Batch: 643527 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004, 60331438005, 60331438006

METHOD BLANK: 2614869 Matrix: Water
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004, 60331438005, 60331438006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/12/20 14:44	

LABORATORY CONTROL SAMPLE: 2614870

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

SAMPLE DUPLICATE: 2614871

Parameter	Units	60331300001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2410	2490	3	10	

SAMPLE DUPLICATE: 2614872

Parameter	Units	60331438006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	24900	25300	2	10	

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

QC Batch: 644231
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60331438001

SAMPLE DUPLICATE: 2617910

Parameter	Units	60331147001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	7.1	4	5	H6

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

QC Batch: 644593 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60331438002, 60331438003, 60331438004, 60331438005, 60331438006

SAMPLE DUPLICATE: 2619185

Parameter	Units	60331267002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	7.2	4	5	H6

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

QC Batch: 643357 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004

METHOD BLANK: 2614192 Matrix: Water
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/12/20 07:28	
Fluoride	mg/L	<0.20	0.20	03/12/20 07:28	
Sulfate	mg/L	<1.0	1.0	03/12/20 07:28	

METHOD BLANK: 2615595 Matrix: Water
Associated Lab Samples: 60331438001, 60331438002, 60331438003, 60331438004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/13/20 12:54	
Fluoride	mg/L	<0.20	0.20	03/13/20 12:54	
Sulfate	mg/L	<1.0	1.0	03/13/20 12:54	

LABORATORY CONTROL SAMPLE: 2614193

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	101	90-110	

LABORATORY CONTROL SAMPLE: 2615596

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	2.6	105	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2614194 2614195

Parameter	Units	20145436001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.5	5	5	14.1	14.1	111	112	80-120	1	15	
Fluoride	mg/L	ND	2.5	2.5	2.9	3.0	110	112	80-120	2	15	
Sulfate	mg/L	3.1	5	5	8.8	9.0	114	116	80-120	1	15	

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

MATRIX SPIKE SAMPLE: 2614196

Parameter	Units	60331435001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	37.9	50	88.5	101	80-120	
Fluoride	mg/L	0.27	2.5	3.1	112	80-120	
Sulfate	mg/L	313	250	587	110	80-120	

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

QC Batch: 643359 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60331438005, 60331438006

METHOD BLANK: 2614204 Matrix: Water
Associated Lab Samples: 60331438005, 60331438006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/12/20 07:32	
Fluoride	mg/L	<0.20	0.20	03/12/20 07:32	
Sulfate	mg/L	<1.0	1.0	03/12/20 07:32	

METHOD BLANK: 2615620 Matrix: Water
Associated Lab Samples: 60331438005, 60331438006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/13/20 12:55	
Fluoride	mg/L	<0.20	0.20	03/13/20 12:55	
Sulfate	mg/L	<1.0	1.0	03/13/20 12:55	

METHOD BLANK: 2617956 Matrix: Water
Associated Lab Samples: 60331438005, 60331438006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/16/20 20:38	
Fluoride	mg/L	<0.20	0.20	03/16/20 20:38	
Sulfate	mg/L	<1.0	1.0	03/16/20 20:38	

LABORATORY CONTROL SAMPLE: 2614205

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	2.4	96	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

LABORATORY CONTROL SAMPLE: 2615621

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	2.4	97	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

LABORATORY CONTROL SAMPLE: 2617957

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	97	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2614206 2614207

Parameter	Units	60331438005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	101	50	50	154	154	107	106	80-120	0	15	
Fluoride	mg/L	0.27	2.5	2.5	2.9	2.9	105	106	80-120	1	15	
Sulfate	mg/L	5.9	5	5	11.4	11.5	111	112	80-120	0	15	

MATRIX SPIKE SAMPLE: 2614208

Parameter	Units	60331212008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	14.5	5	19.9	109	80-120	
Fluoride	mg/L	0.28	2.5	2.6	95	80-120	
Sulfate	mg/L	45.2	5	50.5	106	80-120	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: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

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: LEC 847 LANDFILL CCR
Pace Project No.: 60331438

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60331438001	**MW-34-031020**	EPA 200.7	644386	EPA 200.7	644506
60331438002	**MW-33-031020**	EPA 200.7	644386	EPA 200.7	644506
60331438003	**DUP-031020**	EPA 200.7	644386	EPA 200.7	644506
60331438004	**MW-31R-031020**	EPA 200.7	644386	EPA 200.7	644506
60331438005	**MW-32-031020**	EPA 200.7	644386	EPA 200.7	644506
60331438006	**MW-35-031020**	EPA 200.7	644386	EPA 200.7	644506
60331438001	**MW-34-031020**	SM 2540C	643527		
60331438002	**MW-33-031020**	SM 2540C	643527		
60331438003	**DUP-031020**	SM 2540C	643527		
60331438004	**MW-31R-031020**	SM 2540C	643527		
60331438005	**MW-32-031020**	SM 2540C	643527		
60331438006	**MW-35-031020**	SM 2540C	643527		
60331438001	**MW-34-031020**	SM 4500-H+B	644231		
60331438002	**MW-33-031020**	SM 4500-H+B	644593		
60331438003	**DUP-031020**	SM 4500-H+B	644593		
60331438004	**MW-31R-031020**	SM 4500-H+B	644593		
60331438005	**MW-32-031020**	SM 4500-H+B	644593		
60331438006	**MW-35-031020**	SM 4500-H+B	644593		
60331438001	**MW-34-031020**	EPA 300.0	643357		
60331438002	**MW-33-031020**	EPA 300.0	643357		
60331438003	**DUP-031020**	EPA 300.0	643357		
60331438004	**MW-31R-031020**	EPA 300.0	643357		
60331438005	**MW-32-031020**	EPA 300.0	643359		
60331438006	**MW-35-031020**	EPA 300.0	643359		

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Sample Condition Upon Receipt

WO# : 60331438

60331438

Client Name: Evergy Kansas Central

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-299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 1.8 Corr. Factor +0. HS 3.11 +1.0 Corrected 2.8

HS
Date and initials of person examining contents: 3.11.20

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 #603173	☑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: _____

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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:	Lawrence Energy Center (LEC)
	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
	Andrew Hare, Tabitha Hylton, Samantha Kaney
Purchase Order No.:	10LEC-0000018165
Project Name:	LEC 847 Landfill CCR
Project Number:	129778-038

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	EVERGY KANSAS CENTRAL, INC
Address:	SAME AS A
Pace Quote Reference:	
Pace Project Manager:	Jasmine Amerin, 913-563-1403
Pace Profile #:	9655, 2

REGULATORY AGENCY

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

Site Location STATE: KS

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 200.7 Total Metals*	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-34-031020	WT		03/10	940				3	X		X					X	X	X	X		60331438
2	MW-33-031020				1045					X		X					X	X	X	X		
3	Dup-031020				1055					X		X					X	X	X	X		
4	MW-31R-031020				1205					X		X					X	X	X	X		
5	MW-32-031020				1300					X		X					X	X	X	X		
6	MW-35-031020				1350					X		X					X	X	X	X		
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
200.7 Total Metals*: B, Ca	Eli Fredrickson HHA	03/11	1415	EBrodett / Pace	3/11/20	14:20

SAMPLE CONDITIONS

2.8 / 3.8	3.11		
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.8 / 3.8	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: Eli Fredrickson DATE Signed (MM/DD/YY): 03/11/20

*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.

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

ATTACHMENT 1-2
September 2020 Sampling Event
Laboratory Analytical Report

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

September 28, 2020

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

RE: Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

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

Revised Report REV_2

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: Andrew Hare, Evergy, Inc.
Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Tabitha Hylton, KCP&L & Westar, Evergy Companies
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Melanie Satanek, Haley & Aldrich, Inc.
Danielle Zinmaster, Haley & Aldrich

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

CERTIFICATIONS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

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
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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60348431001	**MW-32-091520**	Water	09/15/20 09:35	09/15/20 17:20
60348431002	**MW-35-091520**	Water	09/15/20 09:13	09/15/20 17:20
60348431003	**MW-31R-091520**	Water	09/15/20 10:50	09/15/20 17:20
60348431004	**MW-33-091520**	Water	09/15/20 09:30	09/15/20 17:20
60348431005	**MW-34-091520**	Water	09/15/20 10:15	09/15/20 17:20
60348431006	**DUP-LF-091520**	Water	09/15/20 17:00	09/15/20 17:20

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SAMPLE ANALYTE COUNT

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60348431001	**MW-32-091520**	EPA 200.7	JLH	7	PASI-K
		EPA 200.7	JLH	2	PASI-K
		SM 2320B	CRN2	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348431002	**MW-35-091520**	EPA 200.7	JLH	7	PASI-K
		EPA 200.7	JLH	2	PASI-K
		SM 2320B	CRN2	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60348431003	**MW-31R-091520**	EPA 200.7	JLH	7	PASI-K
		EPA 200.7	JLH	2	PASI-K
		SM 2320B	CRN2	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60348431004	**MW-33-091520**	EPA 200.7	JLH	7	PASI-K
		EPA 200.7	JLH	2	PASI-K
		SM 2320B	CRN2	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348431005	**MW-34-091520**	EPA 200.7	JLH	7	PASI-K
		EPA 200.7	JLH	2	PASI-K
		SM 2320B	CRN2	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348431006	**DUP-LF-091520**	EPA 200.7	JLH	7	PASI-K
		EPA 200.7	JLH	2	PASI-K
		SM 2320B	CRN2	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB, MJK	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory

PASI-K = Pace Analytical Services - Kansas City

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

PROJECT NARRATIVE

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Date: September 28, 2020

9/25/20-Amended report revised to pull in metals data for sample 60348431-002 and to include chloride rerun results for samples 60348431-002 and 60348431-003.

9/28/20-Amended report revised to report the chloride results for samples 60348431-002 and 60348431-003 at a dilution rather than the 1x result and to include the updated chloride rerun result for sample 60348431-006.

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Sample: MW-32-091520 **Lab ID: 60348431001** Collected: 09/15/20 09:35 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	**0.19**	mg/L	0.10	1	09/22/20 13:40	09/23/20 12:11	7440-42-8	
Calcium, Total Recoverable	**60.4**	mg/L	0.20	1	09/22/20 13:40	09/23/20 12:11	7440-70-2	
Iron, Total Recoverable	**0.27**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:11	7439-89-6	
Magnesium, Total Recoverable	**13.2**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:11	7439-95-4	
Manganese, Total Recoverable	**0.014**	mg/L	0.0050	1	09/22/20 13:40	09/23/20 12:11	7439-96-5	
Potassium, Total Recoverable	**2.5**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:11	7440-09-7	
Sodium, Total Recoverable	**116**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:11	7440-23-5	
200.7 Metals, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Kansas City							
Iron, Dissolved	**0.27**	mg/L	0.050	1	09/18/20 08:15	09/19/20 17:19	7439-89-6	
Manganese, Dissolved	**0.014**	mg/L	0.0050	1	09/18/20 08:15	09/19/20 17:19	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**312**	mg/L	20.0	1		09/18/20 12:02		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		09/18/20 12:02		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**517**	mg/L	10.0	1		09/17/20 12:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		09/19/20 11:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
	Pace Analytical Services - Kansas City							
Chloride	**93.7**	mg/L	20.0	20		09/17/20 17:02	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	1		09/17/20 16:48	16984-48-8	
Sulfate	**6.0**	mg/L	1.0	1		09/17/20 16:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Sample: MW-35-091520 **Lab ID: 60348431002** Collected: 09/15/20 09:13 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	**2.0**	mg/L	0.10	1	09/22/20 13:40	09/23/20 12:14	7440-42-8	
Calcium, Total Recoverable	**525**	mg/L	0.20	1	09/22/20 13:40	09/23/20 12:14	7440-70-2	M1
Iron, Total Recoverable	**3.4**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:14	7439-89-6	
Magnesium, Total Recoverable	**277**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:14	7439-95-4	M1
Manganese, Total Recoverable	**0.19**	mg/L	0.0050	1	09/22/20 13:40	09/23/20 12:14	7439-96-5	
Potassium, Total Recoverable	**37.7**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:14	7440-09-7	M1
Sodium, Total Recoverable	**7870**	mg/L	10.0	20	09/22/20 13:40	09/23/20 13:18	7440-23-5	M1
200.7 Metals, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Kansas City							
Iron, Dissolved	**3.1**	mg/L	0.050	1	09/18/20 08:15	09/19/20 17:22	7439-89-6	
Manganese, Dissolved	**0.21**	mg/L	0.0050	1	09/18/20 08:15	09/19/20 17:22	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**174**	mg/L	20.0	1		09/18/20 12:13		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		09/18/20 12:13		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**25200**	mg/L	2000	1		09/17/20 12:58		
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 11:16		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
	Pace Analytical Services - Kansas City							
Chloride	**14900**	mg/L	5000	5000		09/24/20 15:31	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/24/20 15:01	16984-48-8	
Sulfate	**615**	mg/L	100	100		09/24/20 15:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Sample: MW-31R-091520 **Lab ID: 60348431003** Collected: 09/15/20 10:50 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	**0.75**	mg/L	0.10	1	09/22/20 13:40	09/23/20 12:22	7440-42-8	
Calcium, Total Recoverable	**253**	mg/L	0.20	1	09/22/20 13:40	09/23/20 12:22	7440-70-2	
Iron, Total Recoverable	**2.4**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:22	7439-89-6	
Magnesium, Total Recoverable	**87.6**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:22	7439-95-4	
Manganese, Total Recoverable	**0.076**	mg/L	0.0050	1	09/22/20 13:40	09/23/20 12:22	7439-96-5	
Potassium, Total Recoverable	**13.1**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:22	7440-09-7	
Sodium, Total Recoverable	**2820**	mg/L	5.0	10	09/22/20 13:40	09/23/20 13:46	7440-23-5	
200.7 Metals, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Kansas City							
Iron, Dissolved	**2.4**	mg/L	0.050	1	09/18/20 08:15	09/19/20 17:38	7439-89-6	
Manganese, Dissolved	**0.079**	mg/L	0.0050	1	09/18/20 08:15	09/19/20 17:38	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**240**	mg/L	20.0	1		09/18/20 12:17		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		09/18/20 12:17		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**8420**	mg/L	250	1		09/17/20 12:58		
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 11:26		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
	Pace Analytical Services - Kansas City							
Chloride	**4840**	mg/L	1000	1000		09/24/20 16:17	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/24/20 15:47	16984-48-8	
Sulfate	**187**	mg/L	20.0	20		09/24/20 16:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Sample: MW-33-091520 **Lab ID: 60348431004** Collected: 09/15/20 09:30 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	**1.6**	mg/L	0.10	1	09/22/20 13:40	09/23/20 12:25	7440-42-8	
Calcium, Total Recoverable	**246**	mg/L	0.20	1	09/22/20 13:40	09/23/20 12:25	7440-70-2	
Iron, Total Recoverable	**1.9**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:25	7439-89-6	
Magnesium, Total Recoverable	**127**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:25	7439-95-4	
Manganese, Total Recoverable	**0.080**	mg/L	0.0050	1	09/22/20 13:40	09/23/20 12:25	7439-96-5	
Potassium, Total Recoverable	**20.9**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:25	7440-09-7	
Sodium, Total Recoverable	**4130**	mg/L	5.0	10	09/22/20 13:40	09/23/20 13:28	7440-23-5	
200.7 Metals, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Kansas City							
Iron, Dissolved	**1.7**	mg/L	0.050	1	09/18/20 08:15	09/19/20 17:48	7439-89-6	
Manganese, Dissolved	**0.078**	mg/L	0.0050	1	09/18/20 08:15	09/19/20 17:48	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**195**	mg/L	20.0	1		09/18/20 12:22		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		09/18/20 12:22		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**12900**	mg/L	500	1		09/17/20 12:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		09/19/20 11:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
	Pace Analytical Services - Kansas City							
Chloride	**6960**	mg/L	1000	1000		09/18/20 12:44	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/17/20 18:44	16984-48-8	
Sulfate	**277**	mg/L	20.0	20		09/17/20 18:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Sample: MW-34-091520 **Lab ID: 60348431005** Collected: 09/15/20 10:15 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	**2.2**	mg/L	0.10	1	09/22/20 13:40	09/23/20 12:35	7440-42-8	
Calcium, Total Recoverable	**203**	mg/L	0.20	1	09/22/20 13:40	09/23/20 12:35	7440-70-2	
Iron, Total Recoverable	**1.8**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:35	7439-89-6	
Magnesium, Total Recoverable	**117**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:35	7439-95-4	
Manganese, Total Recoverable	**0.15**	mg/L	0.0050	1	09/22/20 13:40	09/23/20 12:35	7439-96-5	
Potassium, Total Recoverable	**15.6**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:35	7440-09-7	
Sodium, Total Recoverable	**3770**	mg/L	5.0	10	09/22/20 13:40	09/23/20 13:31	7440-23-5	
200.7 Metals, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Kansas City							
Iron, Dissolved	**1.6**	mg/L	0.050	1	09/18/20 08:15	09/19/20 17:53	7439-89-6	
Manganese, Dissolved	**0.15**	mg/L	0.0050	1	09/18/20 08:15	09/19/20 17:53	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**202**	mg/L	20.0	1		09/18/20 12:26		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		09/18/20 12:26		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**11400**	mg/L	500	1		09/17/20 12:59		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		09/19/20 11:22		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
	Pace Analytical Services - Kansas City							
Chloride	**6340**	mg/L	500	500		09/18/20 13:15	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/17/20 19:13	16984-48-8	
Sulfate	**449**	mg/L	100	100		09/18/20 12:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Sample: DUP-LF-091520 **Lab ID: 60348431006** Collected: 09/15/20 17:00 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	**0.76**	mg/L	0.10	1	09/22/20 13:40	09/23/20 12:38	7440-42-8	
Calcium, Total Recoverable	**256**	mg/L	0.20	1	09/22/20 13:40	09/23/20 12:38	7440-70-2	
Iron, Total Recoverable	**2.4**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:38	7439-89-6	
Magnesium, Total Recoverable	**88.7**	mg/L	0.050	1	09/22/20 13:40	09/23/20 12:38	7439-95-4	
Manganese, Total Recoverable	**0.077**	mg/L	0.0050	1	09/22/20 13:40	09/23/20 12:38	7439-96-5	
Potassium, Total Recoverable	**13.4**	mg/L	0.50	1	09/22/20 13:40	09/23/20 12:38	7440-09-7	
Sodium, Total Recoverable	**2750**	mg/L	5.0	10	09/22/20 13:40	09/23/20 13:33	7440-23-5	
200.7 Metals, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City							
Iron, Dissolved	**2.4**	mg/L	0.050	1	09/18/20 08:15	09/19/20 17:59	7439-89-6	
Manganese, Dissolved	**0.081**	mg/L	0.0050	1	09/18/20 08:15	09/19/20 17:59	7439-96-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**233**	mg/L	20.0	1		09/18/20 12:32		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		09/18/20 12:32		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	**8520**	mg/L	250	1		09/17/20 12:59		
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 11:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City							
Chloride	**5830**	mg/L	1000	1000		09/28/20 12:07	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/17/20 19:27	16984-48-8	
Sulfate	**198**	mg/L	100	100		09/18/20 13:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 678219
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: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

METHOD BLANK: 2742633 Matrix: Water
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	mg/L	<0.10	0.10	09/23/20 12:06	
Calcium	mg/L	<0.20	0.20	09/23/20 12:06	
Iron	mg/L	<0.050	0.050	09/23/20 12:06	
Magnesium	mg/L	<0.050	0.050	09/23/20 12:06	
Manganese	mg/L	<0.0050	0.0050	09/23/20 12:06	
Potassium	mg/L	<0.50	0.50	09/23/20 12:06	
Sodium	mg/L	<0.50	0.50	09/23/20 12:06	

LABORATORY CONTROL SAMPLE: 2742634

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1	1.1	107	85-115	
Calcium	mg/L	10	10.4	104	85-115	
Iron	mg/L	10	10.6	106	85-115	
Magnesium	mg/L	10	10.6	106	85-115	
Manganese	mg/L	1	1.0	101	85-115	
Potassium	mg/L	10	10.4	104	85-115	
Sodium	mg/L	10	10.6	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2742635 2742636

Parameter	Units	60348431002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/L	2.0	1	1	3.1	3.0	108	106	70-130	1	20	
Calcium	mg/L	525	10	10	549	534	238	93	70-130	3	20	M1
Iron	mg/L	3.4	10	10	13.6	13.5	101	101	70-130	0	20	
Magnesium	mg/L	277	10	10	294	294	169	172	70-130	0	20	M1
Manganese	mg/L	0.19	1	1	1.2	1.2	98	101	70-130	3	20	
Potassium	mg/L	37.7	10	10	51.6	50.1	139	123	70-130	3	20	M1
Sodium	mg/L	7870	10	10	7950	7850	840	-120	70-130	1	20	M1

MATRIX SPIKE SAMPLE: 2742637

Parameter	Units	60348435002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	5.5	1	6.5	108	70-130	
Calcium	mg/L	315	10	324	95	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

MATRIX SPIKE SAMPLE: 2742637

Parameter	Units	60348435002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	mg/L	3.3	10	13.4	100	70-130	
Magnesium	mg/L	115	10	125	104	70-130	
Manganese	mg/L	0.61	1	1.6	96	70-130	
Potassium	mg/L	27.5	10	37.7	101	70-130	
Sodium	mg/L	236	10	245	93	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 677531
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Dissolved
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

METHOD BLANK: 2739580 Matrix: Water
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	mg/L	<0.050	0.050	09/19/20 17:14	
Manganese, Dissolved	mg/L	<0.0050	0.0050	09/19/20 17:14	

LABORATORY CONTROL SAMPLE: 2739581

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	mg/L	10	10.5	105	85-115	
Manganese, Dissolved	mg/L	1	1.0	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2739582 2739583

Parameter	Units	60348431002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Dissolved	mg/L	3.1	10	10	12.8	12.8	97	97	70-130	0	20	
Manganese, Dissolved	mg/L	0.21	1	1	1.2	1.2	96	95	70-130	1	20	

MATRIX SPIKE SAMPLE: 2739584

Parameter	Units	60348493001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	mg/L	<0.050	10	9.7	97	70-130	
Manganese, Dissolved	mg/L	0.011	1	0.93	92	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 677414 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

METHOD BLANK: 2738945 Matrix: Water
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	09/18/20 11:51	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	20.0	09/18/20 11:51	

SAMPLE DUPLICATE: 2738947

Parameter	Units	60348431001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity,Bicarbonate (CaCO3)	mg/L	312	312	0	10	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 2738948

Parameter	Units	60348435005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity,Bicarbonate (CaCO3)	mg/L	270	274	2	10	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 677404 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

METHOD BLANK: 2738905 Matrix: Water
Associated Lab Samples: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/17/20 12:55	

LABORATORY CONTROL SAMPLE: 2738906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	100	80-120	

SAMPLE DUPLICATE: 2738907

Parameter	Units	60348074001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1010	1020	1	10	

SAMPLE DUPLICATE: 2738908

Parameter	Units	60348217001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	344	354	3	10	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

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: 60348431001, 60348431002, 60348431003, 60348431004, 60348431005

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

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 677707
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: 60348431006

SAMPLE DUPLICATE: 2740239

Parameter	Units	60348435006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	0	5	H6

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 677373
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: 60348431001, 60348431004, 60348431005, 60348431006

METHOD BLANK: 2738789 Matrix: Water
Associated Lab Samples: 60348431001, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/17/20 15:50	
Fluoride	mg/L	<0.20	0.20	09/17/20 15:50	
Sulfate	mg/L	<1.0	1.0	09/17/20 15:50	

METHOD BLANK: 2741280 Matrix: Water
Associated Lab Samples: 60348431001, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/18/20 10:57	
Fluoride	mg/L	<0.20	0.20	09/18/20 10:57	
Sulfate	mg/L	<1.0	1.0	09/18/20 10:57	

METHOD BLANK: 2741286 Matrix: Water
Associated Lab Samples: 60348431001, 60348431004, 60348431005, 60348431006

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	

METHOD BLANK: 2741917 Matrix: Water
Associated Lab Samples: 60348431001, 60348431004, 60348431005, 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/21/20 09:08	
Fluoride	mg/L	<0.20	0.20	09/21/20 09:08	
Sulfate	mg/L	<1.0	1.0	09/21/20 09:08	

LABORATORY CONTROL SAMPLE: 2738790

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	90	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

LABORATORY CONTROL SAMPLE: 2738790

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.7	94	90-110	

LABORATORY CONTROL SAMPLE: 2741281

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.4	94	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

LABORATORY CONTROL SAMPLE: 2741287

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	

LABORATORY CONTROL SAMPLE: 2741918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	103	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE SAMPLE: 2738791

Parameter	Units	60348435002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	237	250	494	103	80-120	
Fluoride	mg/L	2.8	2.5	5.3	102	80-120	
Sulfate	mg/L	1380	500	1930	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2738792 2738793

Parameter	Units	60348429002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2030	250	250	2410	2420	152	153	80-120	0	15	E,M1
Fluoride	mg/L	4.8	50	50	55.9	56.4	102	103	80-120	1	15	
Sulfate	mg/L	587	250	250	919	917	133	132	80-120	0	15	M1

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 678749
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: 60348431002, 60348431003

METHOD BLANK: 2744389 Matrix: Water
Associated Lab Samples: 60348431002, 60348431003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/24/20 14:00	
Fluoride	mg/L	<0.20	0.20	09/24/20 14:00	
Sulfate	mg/L	<1.0	1.0	09/24/20 14:00	

METHOD BLANK: 2745457 Matrix: Water
Associated Lab Samples: 60348431002, 60348431003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/25/20 09:08	
Fluoride	mg/L	<0.20	0.20	09/25/20 09:08	
Sulfate	mg/L	<1.0	1.0	09/25/20 09:08	

LABORATORY CONTROL SAMPLE: 2744390

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.3	106	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	5.4	107	90-110	

LABORATORY CONTROL SAMPLE: 2745458

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2744391 2744392

Parameter	Units	60348651039 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1170	1000	1000	2210	2200	104	103	80-120	1	15	
Fluoride	mg/L	ND	500	500	493	489	99	98	80-120	1	15	
Sulfate	mg/L	272	1000	1000	1270	1260	100	99	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

MATRIX SPIKE SAMPLE: 2744393

Parameter	Units	60349229003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	278	250	563	114	80-120	
Fluoride	mg/L	10.9	125	137	101	80-120	
Sulfate	mg/L	3820	2000	4980	58	80-120	M1

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

QC Batch: 679344
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: 60348431006

METHOD BLANK: 2747020 Matrix: Water
Associated Lab Samples: 60348431006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/28/20 10:23	

LABORATORY CONTROL SAMPLE: 2747021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

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: LEC 847 LANDFILL CCR
Pace Project No.: 60348431

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60348431001	**MW-32-091520**	EPA 200.7	678219	EPA 200.7	678264
60348431002	**MW-35-091520**	EPA 200.7	678219	EPA 200.7	678264
60348431003	**MW-31R-091520**	EPA 200.7	678219	EPA 200.7	678264
60348431004	**MW-33-091520**	EPA 200.7	678219	EPA 200.7	678264
60348431005	**MW-34-091520**	EPA 200.7	678219	EPA 200.7	678264
60348431006	**DUP-LF-091520**	EPA 200.7	678219	EPA 200.7	678264
60348431001	**MW-32-091520**	EPA 200.7	677531	EPA 200.7	677630
60348431002	**MW-35-091520**	EPA 200.7	677531	EPA 200.7	677630
60348431003	**MW-31R-091520**	EPA 200.7	677531	EPA 200.7	677630
60348431004	**MW-33-091520**	EPA 200.7	677531	EPA 200.7	677630
60348431005	**MW-34-091520**	EPA 200.7	677531	EPA 200.7	677630
60348431006	**DUP-LF-091520**	EPA 200.7	677531	EPA 200.7	677630
60348431001	**MW-32-091520**	SM 2320B	677414		
60348431002	**MW-35-091520**	SM 2320B	677414		
60348431003	**MW-31R-091520**	SM 2320B	677414		
60348431004	**MW-33-091520**	SM 2320B	677414		
60348431005	**MW-34-091520**	SM 2320B	677414		
60348431006	**DUP-LF-091520**	SM 2320B	677414		
60348431001	**MW-32-091520**	SM 2540C	677404		
60348431002	**MW-35-091520**	SM 2540C	677404		
60348431003	**MW-31R-091520**	SM 2540C	677404		
60348431004	**MW-33-091520**	SM 2540C	677404		
60348431005	**MW-34-091520**	SM 2540C	677404		
60348431006	**DUP-LF-091520**	SM 2540C	677404		
60348431001	**MW-32-091520**	SM 4500-H+B	677706		
60348431002	**MW-35-091520**	SM 4500-H+B	677706		
60348431003	**MW-31R-091520**	SM 4500-H+B	677706		
60348431004	**MW-33-091520**	SM 4500-H+B	677706		
60348431005	**MW-34-091520**	SM 4500-H+B	677706		
60348431006	**DUP-LF-091520**	SM 4500-H+B	677707		
60348431001	**MW-32-091520**	EPA 300.0	677373		
60348431002	**MW-35-091520**	EPA 300.0	678749		
60348431003	**MW-31R-091520**	EPA 300.0	678749		
60348431004	**MW-33-091520**	EPA 300.0	677373		
60348431005	**MW-34-091520**	EPA 300.0	677373		
60348431006	**DUP-LF-091520**	EPA 300.0	677373		
60348431006	**DUP-LF-091520**	EPA 300.0	679344		

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Sample Condition Upon Receipt

WO# : 60348431

60348431

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 ☑ ZR C

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

Cooler Temperature (°C): **As-read** 1,2,8,1,7 **Corr. Factor** +0.5 **Corrected** 2,2,3,3,2,2

Date and initials of person examining contents: 09/02/24 K

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	3 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	Containers for MW32 say sampled @ 0935
Samples contain multiple phases? Matrix: WT	☐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# L003173	☑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: _____

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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.

Section A Required Client Information:

Company:	EVERGY KANSAS CENTRAL, INC.
Address:	Lawrence Energy Center (LEC)
	818 Kansas Ave, Topeka, KS 66612
Email To:	melissa.michels@evergy.com
Phone: 785-575-8113	Fax:
Requested Due Date/TAT:	RUSH 3 DAY

Section B Required Project Information:

Report To:	Melissa Michels
Copy To:	Jared Morrison, Jake Humphrey, Laura Hines
	Andrew Hare, Tabitha Hylton, Samantha Kaney
Purchase Order No.:	10LEC-0000018165
Project Name:	LEC 847 Landfill CCR
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	EVERGY KANSAS CENTRAL, INC
Address:	SAME AS A
Pace Quote Reference:	
Pace Project Manager:	Jasmine Amerin, 913-563-1403
Pace Profile #:	9655, 1

REGULATORY AGENCY

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

Site Location STATE: KS

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	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*	200.7 Diss. Metals (FF)**	Alkalinity, Bicarbonate (Ca	Alkalinity, Carbonate (CaC	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-32-091520	WT	G	-	-	09/15/20	9:00		3	1		2							x	x	x	x		60348431
2	MW-35-091520	WT	G	-	-	09/15/20	9:13		3	1		2							x	x	x	x		
3	MW-31R-091520	WT	G	-	-	09/15/20	10:50		3	1		2							x	x	x	x		
4	MW-33-091520	WT	G	-	-	09/15/20	9:30		3	1		2							x	x	x	x		
5	MW-34-091520	WT	G	-	-	09/15/20	10:15		3	1		2							x	x	x	x		
6	DUP-LF-091520	WT	G	-	-	09/15/20	17:00		3	1		2							x	x	x	x		
7																								
8																								
9																								
10																								
11																								
12																								

Pace Project No./ Lab I.D.: 60348431

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
200.7 Total Metals*: Mg, Na, K, Fe, Mn	Jason R. Franks / SCS	9/15/20	17:00	MYLER PACE	9/15/20	1720
200.7 Dissolved Metals***: Fe, Mn (FIELD FILTERED)						

SAMPLE CONDITIONS	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	2.2	Y	Y	Y
	3.3	1	1	1
	2.2	1	1	1

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.

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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.

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:	Lawrence Energy Center (LEC)	Copy To:	Jared Morrison, Jake Humphrey, Laura Hines	Company Name:	EVERGY KANSAS CENTRAL, INC
	818 Kansas Ave, Topeka, KS 66612		Andrew Hare, Tabitha Hylton, Samantha Kaney	Address:	SAME AS A
Email To:	melissa.michels@evergy.com	Purchase Order No.:	10LEC-0000018165	Pace Quote Reference:	
Phone:	785-575-8113 Fax:	Project Name:	LEC 847 Landfill CCR	Pace Project Manager:	Jasmine Amerin, 913-563-1403
Requested Due Date/TAT:	RUSH 3 DAY	Project Number:		Pace Profile #:	9655, 1

REGULATORY AGENCY

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

Site Location STATE: KS

Section D Required Client Information

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

Valid Matrix Codes

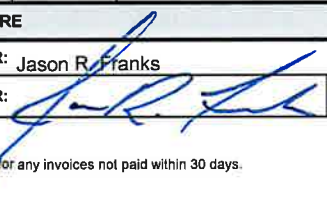
MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	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* N	200.7 Diss. Metals (FF)** Y	Alkalinity, Bicarbonate (Ca) N	Alkalinity, Carbonate (CaC) N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-32-091520	WT	G	-	-	09/15/20	9:35		3	1		2						x	x	x	x			
2	MW-35-091520	WT	G	-	-	09/15/20	9:13		3	1		2						x	x	x	x			
3	MW-31R-091520	WT	G	-	-	09/15/20	10:50		3	1		2						x	x	x	x			
4	MW-33-091520	WT	G	-	-	09/15/20	9:30		3	1		2						x	x	x	x			
5	MW-34-091520	WT	G	-	-	09/15/20	10:15		3	1		2						x	x	x	x			
6	DUP-LF-091520	WT	G	-	-	09/15/20	17:00		3	1		2						x	x	x	x			
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
200.7 Total Metals*: Mg, Na, K, Fe, Mn	Jason R. Franks / SCS	9/15/20	17:00				
200.7 Dissolved Metals**: Fe, Mn (FIELD FILTERED)							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jason R. Franks

SIGNATURE of SAMPLER: 

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

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.

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:	Lawrence Energy Center (LEC)
	818 Kansas Ave, Topeka, KS 66612
Email To:	melissa.michels@evergy.com
Phone: 785-575-8113	Fax:
Requested Due Date/TAT:	RUSH 3 DAY

Section B — **Required** Project Information:

Report To:	Melissa Michels
Copy To:	Jared Morrison, Jake Humphrey, Laura Hines
	Andrew Hare, Tabitha Hylton, Samantha Kaney, Danielle Zinsmaster
Purchase Order No.:	10LEC-0000018165
Project Name:	LEC 847 Landfill CCR
Project Number:	

Section C — Invoice Information:

Attention:	Accounts Payable
Company Name:	EVERGY KANSAS CENTRAL, INC
Address:	SAME AS A
Pace Quote Reference:	
Pace Project Manager:	Jasmine Amerin, 913-563-1403
Pace Profile #:	9655, 2

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	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: 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.
																		Requested Analysis Filtered (Y/N)	N	N	N	N		
1	MW-32-091520	WT	G	-	-	09/15/20	9:35		3	2		1						x	x	x	x		
2	MW-35-091520	WT	G	-	-	09/15/20	9:13		3	2		1						x	x	x	x		
3	MW-31R-091520	WT	G	-	-	09/15/20	10:50		3	2		1						x	x	x	x		
4	MW-33-091520	WT	G	-	-	09/15/20	9:30		3	2		1						x	x	x	x		
5	MW-34-091520	WT	G	-	-	09/15/20	10:15		3	2		1						x	x	x	x		
6	DUP-LF-091520	WT	G	-	-	09/15/20	17:00		3	2		1						x	x	x	x		
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	Jason R. Franks / SCS	9/15/20	17:00				

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

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 2
Statistical Analysis

ATTACHMENT 2-1
September 2019 Statistical Analysis

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

TECHNICAL MEMORANDUM

October 7, 2022
File No. 129778-049

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

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

SUBJECT: September 2019 Semi-Annual Groundwater Detection Monitoring Data Statistical Evaluation
Completed on January 20, 2020
Lawrence Energy Center
847 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 Lawrence Energy Center (LEC) 847 Landfill. This semi-annual detection monitoring groundwater sampling event was completed on **September 3 – 4**, **2019,** with laboratory results received and accepted on **October 21, 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 the coal combustion residuals (CCR) unit (40 CFR § 257.93(f) (1-4)). One statistical method used for these evaluations, the prediction limits (PL) method, was 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

Either an interwell or intrawell evaluation was used to complete the statistical evaluation of the referenced data set. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data (MW-32 and MW-35), and the intrawell evaluation compares the most recent values from each compliance well against a background dataset composed of its own historical data.

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 locations MW-32 and MW-35 (for interwell evaluation) were combined to calculate the UPL for each Appendix III constituent. The variability and distribution of the pooled dataset were 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 (interwell evaluation) and June 2017 (intrawell evaluation).**

RESULTS OF APPENDIX III DOWNGRADIENT STATISTICAL COMPARISONS

The 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 PLs (Table I). A sample concentration greater than the background UPL is considered to represent an SSI. Based on previous compliance sampling events, statistical evaluations, and associated alternative source demonstrations, an intrawell comparison is utilized for MW-34 for boron and fluoride statistical evaluations. Interwell comparisons are being utilized for all other well and

constituent evaluations. 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 LEC 847 Landfill.**

Tables:

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

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL DETECTION GROUNDWATER MONITORING STATISTICAL EVALUATION
SEPTEMBER 2019 SAMPLING EVENT
LAWRENCE ENERGY CENTER - 847 LANDFILL
LAWRENCE, KANSAS

													Inter-well Analysis		Intra-well 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**	**Background Limit[2] (UPL) mg/L**	**SSI**
	CCR Appendix-III: Boron, Total (mg/L)															
MW-32	12/12	0%	-	0.19	0.00003348	0.005786	0.0321	No	No	Stable			2.05			
MW-35	12/12	0%	-	2.05	0.02365	0.1538	0.08458	Yes	No	Stable						
MW-31R	12/12	0%	-	0.71	0.004687	0.06846	0.1098	Yes	No	Stable	Normal	0.523		N		
MW-33	12/12	0%	-	1.7	0.01126	0.1061	0.06534	No	No	Stable	Non-parametric	1.39		N		
MW-34	12/12	0%	-	2.13	0.01847	0.1359	0.06839	Yes	No	Increasing	Normal	1.81			2.56	N
	CCR Appendix-III: Calcium, Total (mg/L)															
MW-32	12/12	0%	-	61.9	3.317	1.821	0.0309	No	No	Stable			545			
MW-35	12/12	0%	-	545	1632	40.39	0.07936	Yes	No	Stable						
MW-31R	12/12	0%	-	248	230	15.16	0.06888	No	No	Stable	Normal	198		N		
MW-33	12/12	0%	-	265	128.4	11.33	0.04535	No	No	Stable	Normal	224		N		
MW-34	12/12	0%	-	243	206.4	14.37	0.06489	No	No	Decreasing	Normal	195		N		
	CCR Appendix-III: Chloride (mg/L)															
MW-32	12/12	0%	-	113	43.56	6.6	0.06702	No	No	Increasing			16700			
MW-35	12/12	0%	-	16700	1546000	1244	0.08788	No	No	Stable						
MW-31R	11/12	8%	1-1	5210	1581000	1257	0.3348	Yes	No	Stable	Non-parametric	3530		N		
MW-33	12/12	0%	-	8700	321800	567.2	0.07537	Yes	No	Stable	Normal	7300		N		
MW-34	12/12	0%	-	6960	167200	408.9	0.06551	No	No	Stable	Normal	6330		N		
	CCR Appendix-III: Fluoride (mg/L)															
MW-32	9/12	25%	0.2-0.2	0.31	0.00119	0.0345	0.1473	No	No	Stable			1.70			
MW-35	2/12	83%	0.1-10	1.6	7.976	2.824	2.354	Yes	No	Stable						
MW-31R	9/12	25%	0.2-0.2	0.73	0.03657	0.1912	0.4306	No	No	Stable	Normal	0.31		N		
MW-33	6/12	50%	0.2-4	1.4	1.155	1.075	1.06	Yes	No	Stable	Non-parametric	<0.20		N		
MW-34	9/12	25%	0.2-10	1.9	6.67	2.583	1.297	Yes	No	Stable	Non-parametric	1.2			3.85	N
	CCR Appendix-III: pH (lab) (SU)															
MW-32	12/12	0%	-	7.9	0.02424	0.1557	0.02058	Yes	No	Stable			8.25			
MW-35	12/12	0%	-	7.4	0.008788	0.09374	0.01305	Yes	No	Stable						
MW-31R	12/12	0%	-	7.5	0.01114	0.1055	0.01441	Yes	No	Stable	Normal	7.3		N		
MW-33	12/12	0%	-	7.6	0.006061	0.07785	0.01047	Yes	No	Stable	Normal	7.3		N		
MW-34	12/12	0%	-	7.9	0.02265	0.1505	0.0197	No	No	Stable	Normal	7.4		N		
	CCR Appendix-III: Sulfate (mg/L)															
MW-32	12/12	0%	-	9.1	0.9245	0.9615	0.1334	No	No	Decreasing			666			
MW-35	12/12	0%	-	666	658	25.65	0.04132	No	No	Stable						
MW-31R	12/12	0%	-	180	531.2	23.05	0.1579	No	No	Stable	Normal	180		N		
MW-33	12/12	0%	-	462	2849	53.38	0.1656	Yes	No	Stable	Normal	304		N		
MW-34	12/12	0%	-	517	1434	37.87	0.08215	No	No	Stable	Normal	436		N		
	CCR Appendix-III: Total Dissolved Solids (TDS) (mg/L)															
MW-32	12/12	0%	-	525	334.3	18.28	0.03708	No	No	Stable			27100			
MW-35	12/12	0%	-	27100	48400000	6957	0.3006	Yes	No	Stable						
MW-31R	12/12	0%	-	8200	698600	835.8	0.117	No	No	Stable	Normal	7160		N		
MW-33	12/12	0%	-	14100	1537000	1240	0.09925	No	No	Stable	Normal	12400		N		
MW-34	12/12	0%	-	12300	6272000	2504	0.2381	Yes	No	Stable	Non-parametric	11000		N		

Notes and Abbreviations:

[1] Interwell background data collected from 08/16/2016 through 09/04/2019, unless otherwise noted.

[2] Intrawell background data collected from 08/16/2016 through 06/26/2017.

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

October 7, 2022
File No. 129778-049

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

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

SUBJECT: March 2020 Semi-annual Groundwater Detection Monitoring Data
Statistical Evaluation
Completed on July 14, 2020
Lawrence Energy Center
847 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 Lawrence Energy Center (LEC) 847 Landfill. This semi-annual detection monitoring groundwater sampling event was completed on **March 10, 2020**, with laboratory results received and accepted on **April 18, 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 the coal combustion residuals (CCR) unit (40 CFR § 257.93(f) (1-4)). One statistical method used for these evaluations, the prediction limits (PL) method, was 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

Either an interwell or intrawell evaluation was used to complete the statistical evaluation of the referenced data set. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data (MW-32 and MW-35), and the intrawell evaluation compares the most recent values from each compliance well against a background dataset composed of its own historical data.

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 locations (MW-32 and MW-35 for interwell evaluation) 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 (interwell and intrawell evaluation)**.

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 PLs (Table I). A sample concentration greater than the background UPL is considered to represent an SSI. Based on previous compliance sampling events, statistical evaluations, and associated alternative source demonstrations, an intrawell comparison is utilized for MW-34 for boron and fluoride statistical evaluations. Interwell comparisons are being utilized for all other well and constituent

evaluations. 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 March 2020, no SSIs above background PLs occurred at the LEC 847 Landfill.**

Tables:

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
LAWRENCE ENERGY CENTER 847 LANDFILL
LAWRENCE, KANSAS

												Inter-well Analysis		Intra-well 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**	**Background Limit[2] (UPL) mg/L**	**SSI**
	CCR Appendix-III: Boron, Total (mg/L)															
MW-32	13/13	0%	-	0.19	0.00003069	0.00554	0.03074	No	No	Stable			2.050			
MW-35	13/13	0%	-	2.05	0.02189	0.1479	0.08118	Yes	No	Stable						
MW-31R	13/13	0%	-	0.719	0.004996	0.07068	0.112	No	No	Decreasing	Normal	0.719		N		
MW-33	13/13	0%	-	1.7	0.01064	0.1032	0.06371	No	No	Stable	Non-parametric	1.56		N		
MW-34	13/13	0%	-	2.13	0.01759	0.1326	0.0665	Yes	No	Increasing	Normal	2.08			2.508	N
	CCR Appendix-III: Calcium, Total (mg/L)															
MW-32	13/13	0%	-	61.9	3.057	1.749	0.02965	No	No	Stable			545			
MW-35	13/13	0%	-	545	1502	38.75	0.07603	Yes	No	Stable						
MW-31R	13/13	0%	-	264	358.6	18.94	0.08471	No	No	Stable	Normal	264		N		
MW-33	13/13	0%	-	265	118.1	10.87	0.04345	No	No	Stable	Normal	252		N		
MW-34	13/13	0%	-	243	199.3	14.12	0.06401	No	No	Decreasing	Normal	210		N		
	CCR Appendix-III: Chloride (mg/L)															
MW-32	13/13	0%	-	113	40.42	6.358	0.06443	No	No	Increasing			16700			
MW-35	13/13	0%	-	16700	1741000	1319	0.09221	No	No	Stable						
MW-31R	12/13	8%	1-1	5210	1461000	1209	0.3193	Yes	No	Stable	Normal	4150		N		
MW-33	13/13	0%	-	8700	363800	603.1	0.08092	Yes	No	Stable	Normal	6580		N		
MW-34	13/13	0%	-	6960	168300	410.3	0.06609	No	No	Stable	Normal	5800		N		
	CCR Appendix-III: Fluoride (mg/L)															
MW-32	10/13	23%	0.2-0.2	0.31	0.00119	0.03449	0.1456	No	No	Stable			1.700			
MW-35	2/13	85%	0.1-10	1.6	7.389	2.718	2.42	Yes	No	Stable						
MW-31R	9/13	31%	0.2-0.2	0.73	0.03811	0.1952	0.4589	No	No	Stable	Normal	< 0.20		N		
MW-33	6/13	54%	0.2-4	1.4	1.11	1.054	1.107	Yes	No	Stable	Non-parametric	< 0.20		N		
MW-34	10/13	23%	0.2-10	1.9	6.319	2.514	1.347	Yes	No	Stable	Normal	0.36			3.539	No
	CCR Appendix-III: pH (lab) (SU)															
MW-32	13/13	0%	-	7.9	0.02231	0.1494	0.01973	Yes	No	Stable			8.25			
MW-35	13/13	0%	-	7.4	0.01167	0.108	0.015	Yes	No	Stable						
MW-31R	13/13	0%	-	7.5	0.01064	0.1032	0.01407	Yes	No	Stable	Normal	7.4		N		
MW-33	13/13	0%	-	7.8	0.0159	0.1261	0.0169	Yes	No	Stable	Normal	7.8		N		
MW-34	13/13	0%	-	7.9	0.02526	0.1589	0.02085	No	No	Increasing	Normal	7.4		N		
	CCR Appendix-III: Sulfate (mg/L)															
MW-32	13/13	0%	-	9.1	0.9791	0.9895	0.1392	No	No	Decreasing			666			
MW-35	13/13	0%	-	666	760.1	27.57	0.04416	No	No	Stable						
MW-31R	13/13	0%	-	187	616.7	24.83	0.1666	No	No	Stable	Normal	187		N		
MW-33	13/13	0%	-	462	2615	51.14	0.1589	Yes	No	Stable	Normal	316		N		
MW-34	13/13	0%	-	535	1736	41.66	0.08928	No	No	Stable	Normal	535		N		
	CCR Appendix-III: Total Dissolved Solids (TDS) (mg/L)															
MW-32	13/13	0%	-	525	308.3	17.56	0.03557	No	No	Stable			27100			
MW-35	13/13	0%	-	27100	44600000	6679	0.2869	Yes	No	Stable						
MW-31R	13/13	0%	-	8200	703800	838.9	0.1163	No	No	Stable	Normal	8050		N		
MW-33	13/13	0%	-	14100	1504000	1226	0.0975	No	No	Stable	Normal	13600		N		
MW-34	13/13	0%	-	12300	5797000	2408	0.2276	Yes	No	Stable	Non-parametric	11300		N		

Notes and Abbreviations:

[1] Interwell background data collected from 08/16/2016 through 09/04/2019, unless otherwise noted.

[2] Intrawell background data collected from 08/16/2016 through 09/03/2019.

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-L 815.26	WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), MARCH 2020
	MONITORING WELL
	WATER QUALITY ONLY
	ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 0.20-FT INTERVAL (AMSL)
	GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
	847 LANDFILL
	FUTURE 847 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 10 MARCH 2020.

3. MW-35 WAS NOT INCLUDED IN THE DATA SET USED TO CREATE THE DISPLAYED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION LINES.

4. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 10 MARCH 2020 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 04 MARCH 2020

N

0 250 500

SCALE IN FEET

HALEY ALDRICH

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

847 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 10, 2020

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OCTOBER 2022

FIGURE 2

LEGEND

MW-L 815.26	WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), SEPTEMBER 2020
	MONITORING WELL
	WATER QUALITY ONLY
	ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 0.20-FT INTERVAL (AMSL)
	GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
	847 LANDFILL
	FUTURE 847 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 15 SEPTEMBER 2020.

3. MW-35 WAS NOT INCLUDED IN THE DATA SET USED TO CREATE THE DISPLAYED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION LINES.

4. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 15 SEPTEMBER 2020 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 04 MARCH 2020

N

0 250 500

SCALE IN FEET

HALEY ALDRICH

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

847 LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 15, 2020

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FIGURE 3