

**2019 – 2020 ANNUAL GROUNDWATER MONITORING  
AND CORRECTIVE ACTION REPORT**

AREA 2 POND, AREA 3 POND, AND AREA 4 POND  
LAWRENCE ENERGY CENTER  
LAWRENCE, KANSAS

by Haley & Aldrich, Inc.  
Cleveland, Ohio

for Evergy Kansas Central, Inc.  
Topeka, Kansas

File No. 129778-037  
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**2019 – 2020 Annual Groundwater Monitoring  
and Corrective Action Report**

This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Lawrence Energy Center Area 2 Pond (inactive), Area 3 Pond (inactive), and Area 4 Pond (inactive; collectively, Ash Ponds) consistent with applicable sections of Code of Federal Regulations Title 40 §§ 257.90 through 257.98, and describes activities conducted from July 2019 through June 2020 and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2019 – 2020 Annual Groundwater Monitoring and Corrective Action Report for the LEC Ash Ponds is, to the best of my knowledge, accurate and complete.

Signed:   
Professional Geologist

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



## **1. Introduction**

This 2019 – 2020 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the Area 2 Pond (inactive), Area 3 Pond (inactive), and Area 4 Pond (inactive; collectively, Ash Ponds) at the Lawrence Energy Center (LEC), operated by Evergy Kansas Central, Inc. (Evergy; f/k/a/ Westar Energy, Inc.). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residual (CCR) Rule (Rule) effective 19 October 2015, including subsequent revisions, specifically Code of Federal Regulations Title 40 (40 CFR), subsection § 257.90(e). Evergy prepared and placed in the facility's operating record a notification of intent to initiate closure of the Ash Ponds by 17 December 2015. Due to the USEPA Extension of Compliance Deadlines for Certain Inactive Surface Impoundments, Response to Partial Vacatur effective 4 October 2016, in accordance with the requirement under § 257.100(e)(1), the alternative reporting timeframes specified in § 257.100(e)(2) through (6) are applicable for the Ash Ponds.

This Annual Report documents the groundwater monitoring system for the Ash Ponds consistent with applicable sections of §§ 257.90 through 257.98, and describes activities conducted between July 2019 and June 2020 and documents compliance with the Rule. The specific requirements listed in § 257.90(e)(1) through (5) of the Rule are provided in Section 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.

## 2. 40 CFR § 257.90 Applicability

### 2.1 40 CFR § 257.90(a)

***All CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §§ 257.90 through 257.98, except as provided in paragraph (g) of this section.***

Energy has installed and certified a multi-unit groundwater monitoring system at the LEC Ash Ponds. The Ash Ponds are 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).***

#### ***40 CFR 257.100(e)(5)(ii)***

***No later than August 1, 2019, prepare the initial groundwater monitoring and corrective action report as set forth in § 257.90(e.)***

This Annual Report describes monitoring completed and actions taken for the groundwater monitoring system at the LEC Ash Ponds as required by the Rule. Groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 and § 257.95 is also provided in this report. This Annual Report documents the applicable groundwater-related activities completed from July 2019 through June 2020.

#### 2.2.1 Status of the Groundwater Monitoring Program

The Ash Ponds were in the detection monitoring program through September 2019. The first annual assessment monitoring event occurred in December 2019 with laboratory analyses completed in January 2020, thus establishing an assessment monitoring program. The Ash Ponds have remained in the assessment monitoring program through June 2020.

## **2019 – 2020 Annual Groundwater Monitoring and Corrective Action Report**

### **2.2.2 Key Actions Completed**

The 2018 – 2019 Annual Groundwater Monitoring and Corrective Action Report was completed in July 2019 for the time period through June 2019. Statistical evaluation was completed in July 2019 on analytical data from the March 2019 detection monitoring sampling event and statistically significant increases (SSI) over background concentrations were identified. An alternative source demonstration (ASD) was not successfully completed within 90 days for the March 2019 detection monitoring sampling event.

A semi-annual detection monitoring sampling event was completed in September 2019 for Appendix III constituents while the ASD was being pursued. Since the ASD was not successfully completed for the March 2019 detection monitoring sampling event, statistical evaluation was not completed on analytical data from the September 2019 detection monitoring sampling event.

The initial annual assessment monitoring sampling event was completed in December 2019, with laboratory analyses completed in January 2020, thus establishing an assessment monitoring program. This sampling event identified detected Appendix IV constituents for subsequent semi-annual sampling events in March and September 2020. Groundwater protection standards for detected Appendix IV constituents were established at that time. Semi-annual assessment monitoring sampling was completed in March 2020 for detected Appendix IV constituents identified during the December 2019 annual monitoring event. Statistical evaluation of the results from the March 2020 semi-annual assessment monitoring sampling event are due to be completed in July 2020 and will be reported in the next annual report.

### **2.2.3 Problems Encountered**

No noteworthy problems (i.e., problems could include damaged wells, issues with sample collection or lack of sampling, or problems with analytical analysis) were encountered at the Ash Ponds from July 2019 through June 2020.

### **2.2.4 Actions to Resolve Problems**

No problems were encountered at the Ash Ponds from July 2019 through June 2020; therefore, no actions to resolve the problems were required.

### **2.2.5 Project Key Activities for Upcoming Year**

Key activities planned for July 2020 through June 2021 include the 2019 – 2020 Annual Groundwater Monitoring and Corrective Action Report, statistical analysis of assessment monitoring analytical data collected in March 2020, semi-annual assessment monitoring and subsequent statistical evaluations, and annual assessment monitoring.

### **2.3 40 CFR § 257.90(e) – INFORMATION**

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

#### **2.3.1 40 CFR § 257.90(e)(1) – CCR Unit and Monitoring Well Network**

***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 LEC Ash Ponds 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 from July 2019 to June 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 § 257.95(b), one independent detection monitoring sample was collected from each background and downgradient monitoring well in September 2019. Two independent assessment monitoring samples were collected from each background and downgradient well in December 2019 (Appendix IV constituents only) and March 2020. A summary including sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the Ash Ponds is presented in Table I of this report.

#### **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***

Detection monitoring was conducted in accordance with § 257.94(b) through September 2019. SSIs identified during the March 2019 detection monitoring sampling event are provided in Table II. The initial annual assessment monitoring sampling event was completed in December 2019 in accordance with § 257.95(b) with laboratory results completed in January 2020, thus establishing an assessment monitoring program. Assessment monitoring samples from March 2020 were collected in accordance with § 257.95(d)(1).

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

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

This Annual Report documents activities conducted to comply with §§ 257.90 through 257.95 of the Rule. It is understood that there are supplemental references in §§ 257.90 through 257.98 that must be placed in the Annual Report. The following requirements include relevant and required information in the Annual Report for activities completed from July 2019 through June 2020.

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

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

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

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

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

An ASD was not successfully completed for the March 2019 detection monitoring sampling event.

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

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

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

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

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

An assessment monitoring program has been implemented at the CCR unit since December 2019. One round of assessment monitoring sampling was completed between July 2019 and June 2020. Analytical results for both downgradient and upgradient wells are provided in Table I. The background concentrations (upper tolerance limits) and groundwater protection standards established for detected Appendix IV constituents for the Ash Ponds are included in Table III. The background concentrations and groundwater protection standards provided in Table III will be utilized for the statistical evaluations completed for the March 2020 semi-annual assessment monitoring sampling event.

**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 ASD or certification was required prior to July 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 from July 2019 through June 2020; therefore, no demonstration or certification is applicable for this unit.

## **TABLES**

**TABLE I**  
**SUMMARY OF ANALYTICAL RESULTS - DETECTION AND ASSESSMENT MONITORING**  
EVERGY KANSAS CENTRAL, INC.  
LAWRENCE ENERGY CENTER  
ASH PONDS  
ST. MARYS, KANSAS

Location	Upgradient			Downgradient																	
	MW-37			MW-38			MW-39						MW-40			MW-K			MW-L		
	833.290			832.626			830.615						831.358			842.6			843.05		
Measure Point (TOC)	MW-37	MW-37-120619	MW-37-031020	MW-38	MW-38-120619	MW-38-031020	MW-39	MW-39-120619	DUP-120619	MW-39-031120	DUP-031120	MW-40	MW-40-120619	MW-40-031120	MW-K	MW-K_120619	MW-K-031120	MW-L	MW-L_120619	MW-L-031120	
Sample Name	MW-37	MW-37-120619	MW-37-031020	MW-38	MW-38-120619	MW-38-031020	MW-39	MW-39-120619	DUP-120619	MW-39-031120	DUP-031120	MW-40	MW-40-120619	MW-40-031120	MW-K	MW-K_120619	MW-K-031120	MW-L	MW-L_120619	MW-L-031120	
Sample Date	9/4/2019	12/6/2019	3/10/2020	9/4/2019	12/6/2019	3/10/2020	9/4/2019	12/06/2019	12/06/2019	3/11/2020	3/11/2020	9/4/2019	12/6/2019	3/11/2020	9/5/2019	12/06/2019	03/11/2020	9/5/2019	12/06/2019	03/11/2020	
Final Lab Report Date	9/16/2019	12/18/2019	3/20/2020	9/16/2019	12/18/2019	3/20/2020	9/16/2019	12/18/2019	12/18/2019	3/20/2020	3/20/2020	9/16/2019	12/18/2019	3/20/2020	9/16/2019	12/18/2019	3/20/2020	9/16/2019	12/18/2019	3/20/2020	
Final Lab Report Revision Date	N/A	N/A	3/31/2020	N/A	N/A	3/31/2020	N/A	N/A	N/A	3/31/2020	3/31/2020	N/A	N/A	3/31/2020	N/A	N/A	3/31/2020	N/A	N/A	3/31/2020	
Final Radiation Lab Report Date	N/A	1/2/2020	4/2/2020	N/A	1/2/2020	4/2/2020	N/A	1/2/2020	1/2/2020	4/2/2020	4/2/2020	N/A	1/2/2020	4/2/2020	N/A	1/2/2020	4/2/2020	N/A	1/2/2020	4/2/2020	
Final Radiation Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lab Data Reviewed and Accepted	10/21/2019	1/9/2020	4/18/2020	10/21/2019	1/9/2020	4/18/2020	10/21/2019	1/9/2020	1/9/2020	4/18/2020	4/18/2020	10/21/2019	1/9/2020	4/18/2020	10/21/2019	1/9/2020	4/18/2020	10/21/2019	1/9/2020	4/18/2020	
Depth to Water (ft btoc)	6.55	9.61	6.79	10.65	14.04	14.93	8.84	11.49	-	13.70	-	9.38	11.96	14.38	20.76	24.24	<b>25.12</b>	23.03	24.24	<b>25.81</b>	
Temperature (Deg C)	15.88	13.26	8.83	16.41	14.49	10.59	17.45	14.83	-	10.34	-	18.08	14.92	11.79	17.85	14.72	<b>10.17</b>	19.27	14.76	<b>10.38</b>	
Conductivity (µS/cm)	836	1073	929	2352	2834	2476	3255	3009	-	3217	-	2958	2686	2693	5,467	4793	<b>4708</b>	4,396	3800	<b>3790</b>	
Turbidity (NTU)	2.95	1.61	5.22	0.62	0.96	0.44	0.52	0.92	-	0.61	-	0.73	2.68	0.32	7.88	1.06	<b>0.66</b>	0.97	0.71	<b>0.51</b>	
Boron, Total (mg/L)	<b>1.75</b>	-	<b>2.0</b>	<b>4.70</b>	-	<b>5.39</b>	<b>4.46</b>	-	-	<b>5.0</b>	<b>4.76</b>	<b>5.45</b>	-	<b>4.93</b>	<b>1.73</b>	-	<b>1.8</b>	<b>2.26</b>	-	<b>2.6</b>	
Calcium, Total (mg/L)	134	-	172	292	-	336	464	-	-	576	577	488	-	464	568	-	562	545	-	551	
Chloride (mg/L)	33.6	-	40.6	201	-	249	334	-	-	317	351	309	-	289	942	-	944	624	-	633	
Fluoride (mg/L)	<b>0.35</b>	<b>0.27</b>	<b>0.27</b>	<b>2.0</b>	<b>5.0</b>	<b>4.9</b>	<0.20	<b>2.9</b>	<b>2.9</b>	<b>2.2</b>	<b>2.2</b>	<0.20	<b>1.6</b>	<b>1.6</b>	<b>3.7</b>	<b>2.9</b>	<b>2.7</b>	<0.20	<b>2.0</b>	<b>2.4</b>	
Sulfate (mg/L)	287	-	319	1220	-	1290	1780	-	-	1730	1720	1650	-	1490	2350	-	2190	1880	-	1880	
pH (su)	<b>7.2</b>	-	<b>7.0</b>	<b>7.4</b>	-	<b>7.6</b>	<b>7.2</b>	-	-	<b>7.2</b>	<b>7.3</b>	<b>7.2</b>	-	<b>7.2</b>	<b>7.2</b>	-	<b>7.3</b>	<b>7.1</b>	-	<b>7.3</b>	
TDS (mg/L)	<b>775</b>	-	<b>853</b>	<b>2440</b>	-	<b>2460</b>	<b>3480</b>	-	-	<b>3370</b>	<b>3450</b>	<b>3160</b>	-	<b>3090</b>	<b>5490</b>	-	<b>5020</b>	<b>4180</b>	-	<b>3880</b>	
Antimony, Total (mg/L)	-	<0.0010	-	-	<0.0010	-	-	<0.0010	<0.0010	-	-	-	<0.0010	-	-	<0.0010	-	-	<0.0010	-	
Arsenic (mg/L)	-	<b>0.0078</b>	<b>0.0065</b>	-	<b>0.015</b>	<b>0.015</b>	-	<b>0.014</b>	<b>0.014</b>	<b>0.0112</b>	<b>0.0112</b>	-	<b>0.015</b>	<b>0.014</b>	-	<b>0.076</b>	<b>0.067</b>	-	<b>0.029</b>	<b>0.024</b>	
Barium, Total (mg/L)	-	<b>0.061</b>	<b>0.065</b>	-	<b>0.031</b>	<b>0.0334</b>	-	<b>0.030</b>	<b>0.031</b>	<b>0.0338</b>	<b>0.0332</b>	-	<b>0.031</b>	<b>0.0321</b>	-	<b>0.040</b>	<b>0.043</b>	-	<b>0.037</b>	<b>0.035</b>	
Beryllium, Total (mg/L)	-	<0.0010	-	-	<0.0010	-	-	<0.0010	<0.0010	-	-	-	<0.0010	-	-	<0.0010	-	-	<0.0010	-	
Cadmium, Total (mg/L)	-	<0.00050	-	-	<0.00050	-	-	<0.00050	<0.00050	-	-	-	<0.00050	-	-	<0.00050	-	-	<0.00050	-	
Chromium, Total (mg/L)	-	<0.0050	-	-	<0.0050	-	-	<0.0050	<0.0050	-	-	-	<0.0050	-	-	<0.0050	-	-	<0.0050	-	
Cobalt, Total (mg/L)	-	<0.0010	-	-	<0.0010	-	-	<0.0010	<0.0010	-	-	-	<0.0010	-	-	<0.0010	-	-	<0.0010	-	
Lead, Total (mg/L)	-	<0.010	-	-	<0.010	-	-	<0.010	<0.010	-	-	-	<0.010	-	-	<0.010	-	-	<0.010	-	
Lithium, Total (mg/L)	-	<b>0.017</b>	<b>0.0180</b>	-	<b>0.075</b>	<b>0.0744</b>	-	<b>0.045</b>	<b>0.042</b>	<b>0.038</b>	<b>0.0369</b>	-	<b>0.045</b>	<b>0.0415</b>	-	<b>0.089</b>	<b>0.077</b>	-	<b>0.057</b>	<b>0.057</b>	
Molybdenum, Total (mg/L)	-	<b>0.14</b>	<b>0.12</b>	-	<b>0.092</b>	<b>0.0822</b>	-	<b>0.19</b>	<b>0.19</b>	<b>0.179</b>	<b>0.180</b>	-	<b>0.11</b>	<b>0.0959</b>	-	<b>0.0096</b>	<b>0.016</b>	-	<b>0.055</b>	<b>0.049</b>	
Selenium, Total (mg/L)	-	<0.0010	-	-	<0.0010	-	-	<0.0010	<0.0010	-	-	-	<0.0010	-	-	<0.0010	-	-	<0.0010	-	
Thallium, Total (mg/L)	-	<0.0010	-	-	<0.0010	-	-	<0.0010	<0.0010	-	-	-	<0.0010	-	-	<0.0050	-	-	<0.0050	-	
Mercury, Total (mg/L)	-	<0.00020	-	-	<0.00020	-	-	<0.00020	<0.00020	-	-	-	<0.00020	-	-	<0.00020	-	-	<0.00020	-	
Fluoride (mg/L)	-	<b>0.27</b>	<b>0.27</b>	-	<b>5.0</b>	<b>4.9</b>	-	<b>2.9</b>	<b>2.9</b>	<b>2.2</b>	<b>2.2</b>	-	<b>1.6</b>	<b>1.6</b>	-	<b>2.9</b>	<b>2.7</b>	-	<b>2.0</b>	<b>2.4</b>	
Radium-226 & 228 Combined (pCi/L)	-	0.0414 +/- 0.563 (0.967)	0.291 ± 0.430 (0.710)	-	<b>1.84 +/- 0.756 (1.08)</b>	0.245 ± 0.440 (0.721)	-	0.760 +/- 0.619 (1.01)	0.000 +/- 0.461 (0.943)	0.484 ± 0.547 (0.860)	0.116 ± 0.444 (0.706)	-	0.912 +/- 0.613 (0.929)	0.553 ± 0.488 (0.651)	-	0.547 ± 0.663 (1.12)	<b>1.21 ± 0.534 (0.642)</b>	-	0.482 ± 0.632 (0.980)	<b>0.939 ± 0.500 (0.679)</b>	

**Notes & Abbreviations:**  
The September 2019 sampling event was for Appendix III constituents only. The March 2020 sampling event included Appendix IV constituents detected in the December 2019 sampling event, and all of the Appendix III constituents.  
Radiological results are presented as activity plus or minus uncertainty with minimum detectable concentration (MDC).  
**Bold value:** Detection above laboratory reporting limit or MDC.  
µS/cm = micro Siemens per centimeter  
ft btoc = feet below top of casing  
Deg C = degrees Celsius  
mg/L = milligrams per liter  
N/A = Not Applicable  
NTU = Nephelometric Turbidity Unit  
pCi/L = picoCuries per liter  
su = standard unit  
TDS = total dissolved solids  
TOC = top of casing

**TABLE II**  
**SUMMARY OF APPENDIX III SSIs**  
MARCH 2019 SAMPLING EVENT  
LAWRENCE ENERGY CENTER  
ASH PONDS

Well ID	Statistical Analysis Completed	Constituent
MW-38	July 2019	Boron
MW-39	July 2019	
MW-40	July 2019	
MW-38	July 2019	Calcium
MW-39	July 2019	
MW-40	July 2019	
MW-K	July 2019	
MW-L	July 2019	
MW-38	July 2019	Chloride
MW-39	July 2019	
MW-40	July 2019	
MW-K	July 2019	
MW-L	July 2019	
MW-38	July 2019	Fluoride
MW-39	July 2019	
MW-40	July 2019	
MW-K	July 2019	
MW-L	July 2019	
MW-38	July 2019	Sulfate
MW-39	July 2019	
MW-40	July 2019	
MW-K	July 2019	
MW-L	July 2019	
MW-39	July 2019	Total Dissolved Solids
MW-K	July 2019	
MW-L	July 2019	

**Notes & Abbreviations:**

*SSIs = statistically significant increases*

**TABLE III**  
**ANNUAL ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS**  
 DECEMBER 2019 SAMPLING EVENT  
 LAWRENCE ENERGY CENTER  
 ASH PONDS

Well #	Background Value (UTL)*	GWPS (Higher of MCL / 40 CFR § 257.95(h)(2) or Upper Tolerance Limit)
<b>CCR Appendix-IV Arsenic, Total (mg/L)</b>		
MW-37 (upgradient)	0.00940	
MW-38		0.010
MW-39		0.010
MW-40		0.010
MW-K		0.010
MW-L		0.010
<b>CCR Appendix-IV Barium, Total (mg/L)</b>		
MW-37 (upgradient)	0.0601	
MW-38		2
MW-39		2
MW-40		2
MW-K		2
MW-L		2
<b>CCR Appendix-IV Fluoride, Total (mg/L)</b>		
MW-37 (upgradient)	0.455	
MW-38		4.0
MW-39		4.0
MW-40		4.0
MW-K		4.0
MW-L		4.0
<b>CCR Appendix-IV Lithium, Total (mg/L)</b>		
MW-37 (upgradient)	0.0207	
MW-38		0.040
MW-39		0.040
MW-40		0.040
MW-K		0.040
MW-L		0.040
<b>CCR Appendix-IV Molybdenum, Total (mg/L)</b>		
MW-37 (upgradient)	0.140	
MW-38		0.140
MW-39		0.140
MW-40		0.140
MW-K		0.140
MW-L		0.140
<b>CCR Appendix-IV Radium-226 &amp; 228 Combined (pCi/L)</b>		
MW-37 (upgradient)	2.215	
MW-38		5
MW-39		5
MW-40		5
MW-K		5
MW-L		5

**Notes and Abbreviations:**

\* Background value for interwell evaluation based on data collected through March 2019

CCR = coal combustion residuals

GWPS = Groundwater Protection Standard

MCL = maximum contaminant level

mg/L = milligrams per Liter

NA = Not Applicable

pCi/L = picoCuries per Liter

RSL = Regional Screening Level

**FIGURE**



**LEGEND**

- ASH PONDS
- MONITORING WELL

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, APRIL 17, 2018.
3. AREA 2 POND (INACTIVE), AREA 3 POND (INACTIVE), AND AREA 4 POND (INACTIVE) ARE COLLECTIVELY KNOWN AS THE ASH PONDS.



**HALEY ALDRICH** EVERGY KANSAS CENTRAL, INC.  
LAWRENCE ENERGY CENTER  
LAWRENCE, KANSAS

**ASH PONDS (INACTIVE)  
MONITORING WELL  
LOCATION MAP**

**evergy** JULY 2020  
SCALE: AS SHOWN

FIGURE 1