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31 January 2018
File No. 129778-003

Westar Energy, Inc.
818 South Kansas Avenue
Topeka, Kansas 66612

Attention: Jared Morrison
Manager, Water and Waste Programs

Subject: 2017 Annual Groundwater Monitoring and Corrective Action Report for Ash Landfill 847
Lawrence Energy Center
Lawrence, Kansas

Dear Mr. Morrison:

Haley & Aldrich, Inc. is pleased to submit this Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for the Ash Landfill 847 at the Lawrence Energy Center (LEC). This Annual Report was developed in accordance with the United States Environmental Protection Agency CCR Rule effective 19 October 2015 (Rule), specifically Code of Federal Regulations Title 40, subsection § 257.90(e). The Annual Report documents the design and construction of the groundwater monitoring system for the Ash Landfill 847 consistent with applicable sections of § 257.90 through 257.98.

This Annual Report describes activities conducted in the prior calendar year and documents compliance with the Rule. The specific requirements listed in Sections § 257.90(e)(1)-(5) of the Rule are provided in bold/italic type, followed by a short narrative describing how the Rule has been met.

Sincerely yours,
HALEY & ALDRICH, INC.

A handwritten signature in blue ink, appearing to read "Steve Putrich".

Steve Putrich, P.E.
Project Principal

A handwritten signature in blue ink, appearing to read "Mark Nicholls".

Mark Nicholls, P.G.
Lead Hydrogeologist

2017 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH LANDFILL 847
LAWRENCE ENERGY CENTER
LAWRENCE, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Westar Energy, Inc.
Topeka, Kansas

File No. 129778-003
January 2018



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1	Ash Landfill 847 Monitoring Well Location Map

1. 40 CFR § 257.90 Applicability

1.1 40 CFR § 257.90(a)

Except as provided for in §257.100 for inactive CCR surface impoundments, all CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §257.90 through 257.98.

The Ash Landfill 847 at the Lawrence Energy Center (LEC), which is the coal combustion residuals (CCR) management unit addressed in this Annual Groundwater Monitoring and Corrective Action Report (Annual Report), is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) § 257.90 through 257.98. In particular, this document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e) (Rule).

1.2 40 CFR § 257.90(e)

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

This Annual Report is the initial report for the LEC Ash Landfill 847 as required by the Rule as the groundwater monitoring system was established and certified by 17 October 2017. Prior to 17 October 2017, Westar installed a groundwater monitoring system at the Ash Landfill 847 consistent with § 257.91. Groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 is provided in this report. This Annual Report documents the activities completed in the calendar year 2017.

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

- (1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;***

As required by § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for the Ash Landfill 847 is included in this report as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Network Description Report prepared for Westar, which was placed in the facility's operating record by 17 October 2017 as required by § 257.105(h)(2).

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

The design and construction of the monitoring well network for the Ash Landfill 847 at LEC are described in the CCR Groundwater Monitoring Network Description Report dated 17 October 2017. This report was placed in the facility's operating record by 17 October 2017, as required by § 257.105(h)(2). Since the groundwater monitoring system was certified, no new monitoring wells were installed or decommissioned.

(3) In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

In accordance with § 257.94(b), eight independent samples from each background and downgradient monitoring well were collected prior to 17 October 2017. A summary table including the sample names, dates of sample collection, reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for the Ash Landfill 847 is presented in Table I of this report. In 2017, the groundwater monitoring sampling and laboratory analyses were completed under the detection monitoring program.

(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

Detection monitoring was conducted in accordance with § 257.94(b), and no transitions between monitoring programs occurred for the Ash Landfill 847 in calendar year 2017.

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

This initial Annual Report documents activities conducted to comply with § 257.90 through § 257.94 of the Rule. It is understood that there are supplemental references in § 257.90 through § 257.98 to information that must be placed in the Annual Report; however, none of the activities referenced as required in the Annual Report are relevant to the groundwater monitoring program for activities completed in calendar year 2017.

1.3 40 CFR § 257.90(f)

The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(h), the notification requirements specified in § 257.106(h), and the internet requirements specified in § 257.107(h).

To comply with the Rule recordkeeping requirements:

- Pursuant to § 257.105(h)(1), this Annual Report must be placed in the facility's operating record.
- Pursuant to § 257.106(h)(1), notification must be sent to the relevant State Director and/or Tribal authority within 30 days of this Annual Report being placed on the facility's operating record [§ 257.106(d)].
- Pursuant to § 257.107(h)(1), this Annual Report must be posted to the Westar CCR Website within 30 days of this Annual Report being placed on the facility's operating record [§ 257.107(d)].

TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS
 Westar Lawrence Energy Center
 Ash Landfill 847
 Lawrence, Kansas




Location	Measure Point Elevation (TOC)	Sample Name	Sample Date	Depth to Water (btoc)	Groundwater Elevation (ft AMSL)	Field Parameters				USEPA Appendix III Constituents (mg/L)						USEPA Appendix IV Constituents (mg/L)											USEPA Appendix IV Constituents (pCi/L)					
						Temperature (Deg C)	Conductivity (µS/cm)	Turbidity (NTU)	pH (su)	Boron, Total	Calcium, Total	Chloride	Fluoride	Sulfate	pH	TDS	Antimony, Total	Arsenic, Total	Barium, Total	Beryllium, Total	Cadmium, Total	Chromium, Total	Cobalt, Total	Lead, Total	Lithium, Total	Molybdenum, Total	Selenium, Total	Thallium, Total	Mercury, Total	Fluoride	Radium-226 & 228 Combined	
Up Gradient	MW-32	861.96	MW-32-081616	8/16/2016	45.74	816.22	17.29	893	46	7.51	0.18	59.2	93.2	<0.20	9.1	7.4	480	<0.0010	<0.0010	0.32	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.012	<0.0010	<0.0010	<0.0010	<0.00020	<0.20	15.15
			MW-32-091916	9/19/2016	45.53	816.43	16.71	883	4.8	7.26	0.18	59.5	94.6	0.23	8.6	7.6	497	<0.0010	<0.0010	0.30	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.012	<0.0010	<0.0010	<0.0010	<0.00020	0.23	4.44
			MW-32-103116	10/31/2016	45.56	816.40	15.01	888	5.9	7.15	0.17	58.5	93.0	0.22	8.1	7.9	466	<0.0010	<0.0010	0.30	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.015	<0.0010	<0.0010	<0.0010	<0.00020	0.22	7.09
			MW-32-121216	12/12/2016	45.95	816.01	13.28	861	140.0	7.12	0.19	58.2	92.2	0.22	7.6	7.6	480	<0.0010	<0.0010	0.35	<0.0010	<0.00050	0.0068	0.0015	<0.0050	0.017	<0.0010	<0.0010	<0.0010	<0.00020	0.22	6.76
			MW-32-020617	2/6/2017	45.91	816.05	13.72	875	6.8	6.91	0.18	61.9	94.4	0.21	7.0	7.6	487	<0.0010	<0.0010	0.32	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.012	<0.0010	<0.0010	<0.0010	<0.00020	0.21	3.77
			MW-32-040417	4/4/2017	45.91	816.05	13.85	914	5.3	6.94	0.19	55.7	94.2	<0.20	6.3	7.8	494	<0.0010	<0.0010	0.29	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.011	<0.0010	<0.0010	<0.0010	<0.00020	<0.20	5.61
	MW-32-052217	5/22/2017	45.43	816.53	15.42	886	3.9	7.26	0.18	60.8	102	0.24	6.8	7.6	525	<0.0010	<0.0010	0.30	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.012	<0.0010	<0.0010	<0.0010	<0.00020	0.24	4.33		
	MW-32-062617	6/26/2017	44.95	817.01	15.77	879	3.8	7.28	0.18	61.0	94.1	0.24	7.1	7.5	479	<0.0010	<0.0010	0.30	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.24	5.33		
	MW-35	862.52	MW-35-033117	3/31/2017	47.8	814.72	12.40	34840	45.0	7.50	1.5	407	12200	<0.20	621	7.4	23100	<0.0020	<0.0020	0.085	<0.0010	<0.0010	<0.0050	0.0042	<0.0050	0.40	0.0077	<0.0020	<0.0020	<0.00020	<0.20	85.6
	MW-35-052217		5/22/2017	47.17	815.35	15.43	35800	22.8	7.03	1.8	545	14200	<0.10	650	7.2	24900	0.0053	0.00061	0.14	<0.00016	<0.00018	0.0008	0.0051	0.0039	0.43	0.0052	<0.00086	<0.00036	<0.00024	<0.10	62.82	
	MW-35-060917		6/9/2017	46.96	815.56	16.77	36500	7.2	6.98	1.9	518	14300	<0.10	587	7.2	1490	0.0003	0.00081	0.13	<0.00016	<0.000089	0.0023	0.0040	<0.0048	0.45	0.0052	<0.00043	0.00021	0.000110	<0.10	94.7	
	MW-35-062617		6/26/2017	47.29	815.23	15.95	36900	5.1	7.20	1.9	537	14200	<0.10	605	7.1	25000	<0.00026	0.00099	0.12	<0.00016	<0.00036	<0.00072	0.0043	<0.0024	0.42	0.0095	<0.00086	<0.00073	<0.00024	<0.10	102	
MW-35-071417	7/14/2017		47.62	814.90	16.75	37900	3.7	6.91	1.7	513	14900	1.6	666	7.1	24900	<0.00053	0.00160	0.12	<0.00016	<0.00036	<0.00072	0.0041	<0.0024	0.43	0.0058	<0.0017	<0.00073	<0.00024	1.6	105		
MW-35-072717	7/27/2017		47.97	814.55	16.50	33400	3.8	6.91	1.8	480	14300	<0.10	619	7.1	24400	<0.00013	0.00096	0.12	<0.00016	<0.000089	0.0015	0.0040	<0.0048	0.42	0.0043	<0.00043	<0.00018	<0.00024	<0.10	94.6		
MW-35-081117	8/11/2017	48.07	814.45	16.02	38200	2.9	6.79	1.9	532	12200	1.5	656	7.2	26800	<0.00013	0.00092	0.12	<0.00016	<0.000089	<0.0014	0.0038	0.0050	0.43	0.0048	<0.00043	<0.00018	0.000058	1.5	111			
MW-35-082517	8/25/2017	48.05	814.47	16.33	38400	3.7	6.98	1.8	537	14900	<0.10	627	7.2	23900	<0.00013	0.00096	0.12	<0.00033	<0.000089	<0.0014	0.0038	0.0028	0.54	0.0045	<0.00043	<0.00018	<0.00024	<0.10	109			
Down Gradient	MW-31R	857.67	MW-31R-081716	8/17/2016	41.96	815.71	15.48	1317	5.8	7.74	0.71	214	4150	<0.20	173	7.3	8200	<0.0010	<0.0010	0.18	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.12	0.012	<0.0010	<0.0010	<0.00020	<0.20	21.44
			MW-31R-091916	9/19/2016	41.59	816.08	16.39	12800	2.9	7.39	0.68	214	<1.0	0.60	166	7.4	8200	<0.0010	<0.0010	0.20	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.12	0.010	<0.0010	<0.0010	<0.00020	0.60	16.6
			MW-31R-103116	10/31/2016	41.65	816.02	14.53	13570	2.9	7.25	0.69	228	5210	0.73	175	7.4	6100	0.00039	0.00094	0.21	<0.00026	<0.000058	0.0022	<0.0010	<0.0025	0.14	0.0078	<0.00018	<0.00020	<0.00039	0.73	26.7
			MW-31R-121216	12/12/2016	42.10	815.57	13.27	12380	5.0	7.45	0.69	232	4160	0.53	150	7.3	7850	<0.0010	<0.0010	0.24	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.13	0.0042	<0.0010	<0.0010	<0.00020	0.53	30.10
			MW-31R-020617	2/6/2017	42.06	815.61	13.54	12390	4.3	7.01	0.63	229	3970	<0.20	140	7.4	7400	<0.0010	<0.0010	0.29	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.11	0.0027	<0.0010	<0.0010	<0.00020	<0.20	19.9
			MW-31R-040417	4/4/2017	41.87	815.80	13.54	10740	4.6	7.05	0.56	196	4300	0.32	114	7.5	6100	<0.0010	<0.0010	0.29	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	0.092	0.0021	<0.0010	<0.0010	<0.00020	0.32	24.7
	MW-31R-052217	5/22/2017	40.87	816.80	13.92	11340	4.7	7.18	0.59	224	3910	0.64	126	7.4	7370	0.00021	0.00033	0.27	<0.00016	<0.000089	<0.00072	0.0001	<0.0024	0.11	0.0026	0.00043	<0.00018	<0.00024	0.64	19.45		
	MW-31R-062617	6/26/2017	41.09	816.58	15.62	13260	2.9	6.98	0.69	248	4020	0.62	134	7.1	8070	0.0002	0.00062	0.30	<0.00016	<0.000089	<0.00072	<0.00068	<0.0024	0.12	0.0027	<0.00043	<0.00036	<0.00024	0.62	32.2		
	MW-33	855.44	MW-33-081716	8/17/2016	39.76	815.68	16.53	2020	48.1	7.59	1.5	250	8700	<0.20	462	7.4	13200	<0.0010	0.0011	0.16	<0.0010	<0.00050	<0.0050	0.0020	<0.0050	0.19	0.0091	<0.0010	<0.0010	<0.00020	<0.20	23.08
	MW-33-091916		9/19/2016	39.41	816.03	16.26	20600	7.4	7.21	1.7	259	7780	1.4	359	7.5	14000	<0.0020	0.0015	0.16	<0.0010	<0.00050	<0.0050	0.0020	<0.0050	0.21	0.0083	<0.0010	<0.0020	<0.00020	1.4	22.0	
	MW-33-103116		10/31/2016	39.47	815.97	15.01	20500	11.3	7.26	1.5	251	7850	1.2	345	7.5	9800	0.0003	0.0017	0.16	<0.00026	<0.000087	<0.0014	0.0017	<0.0025	0.22	0.0081	<0.00055	<0.0015	<0.00039	1.2	24.8	
	MW-33-121216		12/12/2016	39.94	815.50	12.79	19900	5.0	7.37	1.7	254	7210	<0.20	349	7.4	12300	<0.0010	0.0018	0.16	<0.0010	<0.00050	<0.0050	0.0016	<0.0050	0.21	0.0059	<0.0010	<0.0010	<0.00020	<0.20	15.8	
	MW-33-020617		2/6/2017	39.90	815.54	13.33	20600	4.3	7.07	1.7	260	7320	<0.20	307	7.5	12400	<0.0010	0.0022	0.16	<0.0010	<0.00050	<0.0050	0.0014	<0.0050	0.22	0.0053	<0.0010	<0.0010	<0.00020	<0.20	21.3	
	MW-33-040417		4/4/2017	39.70	815.74	13.01	21000	5.2	7.12	1.7	236	7150	0.77	260	7.4	12000	<0.0020	0.0023	0.14	<0.0010	<0.0010	<0.0010	<0.0050	0.0010	<0.0050	0.20	0.0049	<0.0010	<0.0020	<0.00020	0.77	24.4
	MW-33-052217	5/22/2017	38.63	816.81	13.70	20600	4.8	7.26	1.7	265	7010	1.3	287	7.6	12900	<0.00026	0.0023	0.13	<0.00016	<0.00018	0.0015	0.00094	<0.0024	0.21	0.0059	<0.00086	<0.00036	<0.00024	1.3	23.30		
	MW-33-062617	6/26/2017	38.79	816.65	15.57	20600	3.7	6.96	1.6	257	7070	1.4	285	7.4	13100	<0.00013	0.0027	0.13	<0.00016	<0.000089	<0.00072	0.00068	<0.0024	0.20	0.0054	<0.00043	0.00048	<0.00024	1.4	25.0		
	MW-34</																															

FIGURES

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Westar\Lawrence Energy Center (LEC)\GIS\MXDs\2016_06_SAPLEC_MW_LOCA_MAP_REV1.mxd — USER: lbruce — LAST SAVED: 1/30/2018 4:57:16 PM

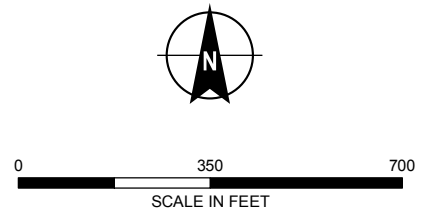


LEGEND

-  MONITORING WELL
-  ASH LANDFILL ACTIVE AREA
-  ASH LANDFILL LIMITS OF DISPOSAL AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2015.



HALEY ALDRICH WESTAR ENERGY
LAWRENCE ENERGY CENTER
LAWRENCE, KANSAS

**ASH LANDFILL 847 MONITORING
WELL LOCATION MAP**

JANUARY 2018
SCALE: AS SHOWN

FIGURE 1