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31 January 2018
File No. 129778-004

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
the Ash Landfill 322
Tecumseh Energy Center
Tecumseh, 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 322 at the Tecumseh Energy Center. 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 322 consistent with applicable sections of § 257.90 through 257.98.

This 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 322
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Westar Energy, Inc.
Topeka, Kansas

File No. 129778-004
January 2018



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1	Ash Landfill No. 322 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 322 at the Tecumseh Energy Center (TEC), 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 TEC Ash Landfill 322 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 322 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 322 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 322 at TEC 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 322 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 322 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)].

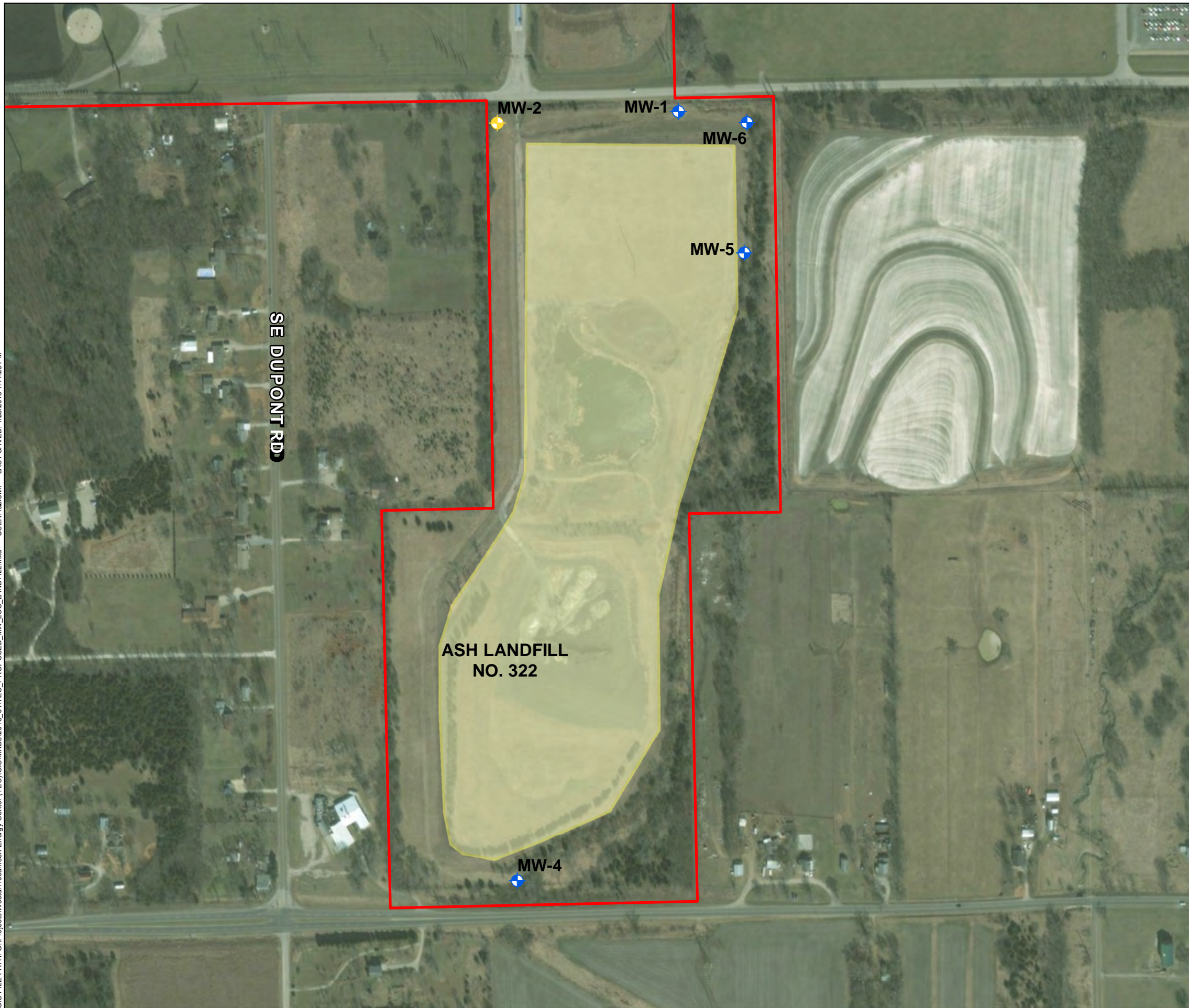
TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS
 Westar Tecumseh Energy Center
 Ash Landfill No. 322
 Tecumseh, 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) Radium-226 & 228 Combined						
						Temperature (Deg C)	Conductivity (µS/cm)	Turbidity (NTU)	pH (su)	Boron, Total	Calcium, Total	Chloride	Fluoride	Sulfate	pH (su)	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		
Up Gradient	MW-4	936.48	MW-4-081716	8/17/2016	4.90	931.58	21.04	1730	6.2	7.09	<0.10	179	263	0.24	137	7.0	1070	<0.0010	<0.0010	0.14	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	0.24	1.92
			MW-4-092016	9/20/2016	3.74	932.74	19.14	1780	3.4	6.90	<0.10	176	271	0.24	141	7.2	1080	<0.0010	<0.0010	0.13	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	0.24	2.46
			MW-4-110116	11/1/2016	3.96	932.52	16.52	1720	3.4	6.87	<0.10	180	251	0.23	128	7.2	1060	<0.0010	<0.0010	0.12	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	0.23	2.11
			MW-4-121316	12/13/2016	4.08	932.40	10.26	1740	7.0	6.85	<0.10	183	268	0.24	142	7.3	935	<0.0010	<0.0010	0.12	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	0.24	1.12
			MW-4-020617	2/6/2017	4.16	932.32	10.54	1710	4.4	6.86	<0.10	188	263	<0.20	140	7.2	1000	<0.0010	<0.0010	0.12	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	<0.20	0.879
			MW-4-040517	4/5/2017	3.05	933.43	11.78	1700	5.4	7.04	<0.10	182	261	0.23	143	7.2	1030	<0.0010	<0.0010	0.11	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	0.23	1.10
			MW-4-052317	5/23/2017	3.81	932.67	15.45	1720	5.1	6.96	<0.10	173	266	<0.20	126	7.3	980	<0.0010	<0.0010	0.11	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	<0.20	0.885
MW-4-062717	6/27/2017	4.54	931.94	15.97	1710	3.4	6.71	<0.10	180	255	<0.20	137	7.2	1040	<0.0010	<0.0010	0.12	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	<0.20	2.64			
Down Gradient	MW-1	904.65	MW-1-081816	8/18/2016	4.56	900.09	17.84	1266	4.0	7.03	<0.10	158	42.6	0.32	337	7.0	920	<0.0010	<0.0010	0.094	<0.0010	<0.00050	<0.0050	0.0029	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.32	0.56	
			MW-1-092016	9/20/2016	3.83	900.82	19.09	1305	2.6	6.85	0.15	158	39.3	0.36	359	7.2	913	<0.0010	<0.0010	0.12	<0.0010	<0.00050	<0.0050	0.0054	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.36	1.78	
			MW-1-110116	11/1/2016	3.92	900.73	16.69	1388	8.3	6.69	0.31	171	29.6	0.39	452	7.1	925	<0.0010	<0.0010	0.20	<0.0010	<0.00050	<0.0050	0.0086	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.39	0.997	
			MW-1-121316	12/13/2016	4.01	900.64	11.82	1405	40.9	6.93	0.38	168	21.4	0.36	400	7.3	937	<0.0010	<0.0010	0.16	<0.0010	<0.00050	<0.0050	0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.36	0.164	
			MW-1-020617	2/6/2017	3.96	900.69	10.37	1390	45.5	6.89	0.34	184	22.5	0.30	450	7.0	993	<0.0010	<0.0010	0.20	<0.0010	<0.00050	<0.0050	0.0010	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.30	0.467	
			MW-1-040517	4/5/2017	3.39	901.26	11.48	1385	25.6	6.97	0.50	176	22.5	0.46	455	7.1	984	<0.0010	<0.0010	0.20	<0.0010	<0.00050	<0.0050	0.0014	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.46	0.455	
			MW-1-052417	5/24/2017	3.80	900.85	14.04	1330	9.7	6.90	0.88	165	18.7	0.37	357	7.4	905	<0.0010	<0.0010	0.0017	<0.0010	<0.00050	<0.0050	0.0010	<0.0050	<0.010	0.0011	<0.0010	<0.0010	<0.00020	0.37	1.07	
	MW-1-062717	6/27/2017	4.05	900.60	16.06	1387	6.3	6.82	0.84	171	19.4	0.39	358	7.1	999	<0.0010	<0.0010	0.0023	0.20	<0.0010	<0.00050	<0.0050	0.0014	<0.0050	<0.010	0.0011	<0.0010	<0.0010	<0.00020	0.39	0.174		
	MW-5	916.18	MW-5-081816	8/18/2016	6.12	910.06	20.91	1800	25.6	7.00	0.35	241	49.2	0.25	653	6.9	1380	<0.0010	<0.0010	0.04	<0.0010	<0.00050	<0.0050	0.0011	<0.0050	0.021	<0.0010	<0.0010	<0.00020	0.25	1.04		
			MW-5-092016	9/20/2016	5.41	910.77	19.14	2280	3.5	6.79	1.2	291	49.3	0.28	868	7.0	1690	<0.0010	<0.0010	0.033	<0.0010	<0.00050	<0.0050	0.0018	<0.0050	0.019	<0.0010	<0.0010	<0.0010	<0.00020	0.28	1.07	
			MW-5-110116	11/1/2016	5.48	910.70	16.63	2340	3.0	6.57	1.2	316	45.3	0.33	1020	7.0	1810	<0.0010	<0.0010	0.030	<0.0010	<0.00050	<0.0050	0.0021	<0.0050	0.022	<0.0010	<0.0010	<0.0010	<0.00020	0.33	1.48	
			MW-5-121316	12/13/2016	5.94	910.24	10.15	2280	6.7	6.69	1.0	303	45.3	0.33	797	7.1	1620	<0.0010	<0.0010	0.028	<0.0010	<0.00050	<0.0050	0.0020	<0.0050	0.024	<0.0010	<0.0010	<0.0010	<0.00020	0.33	1.06	
			MW-5-020617	2/6/2017	6.10	910.08	10.69	2280	4.9	6.49	0.98	321	45.9	<0.20	874	6.9	1740	<0.0010	<0.0010	0.026	<0.0010	<0.00050	<0.0050	0.0018	<0.0050	0.014	<0.0010	<0.0010	<0.0010	<0.00020	<0.20	0.893	
			MW-5-040517	4/5/2017	4.83	911.35	12.15	2240	5.3	6.81	1.2	318	42.9	0.30	892	7.0	1650	<0.0010	<0.0010	0.021	<0.0010	<0.00050	<0.0050	0.0021	<0.0050	<0.010	0.0010	<0.0010	<0.0010	<0.00020	0.30	0.970	
			MW-5-052317	5/23/2017	5.45	910.73	14.64	2180	3.8	6.85	1.1	299	40.9	0.28	829	7.4	1530	<0.0010	<0.0010	0.022	<0.0010	<0.00050	<0.0050	0.0021	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.28	0.940	
	MW-5-062717	6/27/2017	5.61	910.57	16.38	2160	2.6	6.65	1.1	297	39.6	0.42	786	7.0	1690	<0.0010	<0.0010	0.026	<0.0010	<0.00050	<0.0050	0.0020	<0.0050	<0.010	<0.0010	<0.0010	<0.0010	<0.00020	0.42	1.23			
	MW-6	911.28	MW-6-081716	8/17/2016	8.53	902.75	20.71	2110	188	7.08	1.1	275	65.8	0.28	764	7.0	1790	<0.0010	<0.0010	0.041	<0.0010	<0.00050	<0.0050	0.0031	<0.0050	0.018	0.0019	<0.0010	<0.0010	<0.00020	0.28	0.68	
			MW-6-092016	9/20/2016	8.02	903.26	19.75	2160	94.0	6.93	1.1	276	64.3	0.31	857	7.1	1690	<0.0010	<0.0010	0.034	<0.0010	<0.00050	<0.0050	0.0033	<0.0050	0.017	0.0014	<0.0010	<0.0010	<0.00020	0.31	0.35	
			MW-6-110116	11/1/2016	8.01	903.27	18.26	2210	23.5	6.75	1.1	311	59.4	0.39	975	7.1	1690	<0.0010	<0.0010	0.029	<0.0010	<0.00050	<0.0050	0.0031	<0.0050	0.018	0.0012	<0.0010	<0.0010	<0.00020	0.39	0.688	
			MW-6-121316	12/13/2016	8.15	903.13	13.10	2250	22.0	6.91	1.0	302	60.3	0.29	835	7.2	1620	<0.0010	<0.0010	0.028	<0.0010	<0.00050	<0.0050	0.0029	<0.0050	0.022	<0.0010	<0.0010	<0.0010	<0.00020	0.29	0.653	
			MW-6-020617	2/6/2017	8.21	903.07	10.91	2250	7.3	6.73	1.1	323	59.8	0.28	876	7.0	1800	<0.0010	<0.0010	0.028	<0.0010	<0.00050	<0.0050	0.0016	<0.0050	0.013	0.0011	<0.0010	<0.0010	<0.00020	0.28	0.582	
MW-6-040517			4/5/2017	6.90	904.38	12.30	2320	6.4	6.98	0.98	328	59.8	0.38	967	7.2	1810	<0.0010	<0.0010	0.023	<0.0010	<0.00050	<0.0050	0.0016	<0.0050	0.011	0.0012	<0.0010	<0.0010	<0.00020	0.38	0.224		
MW-6-052417			5/24/2017	8.04	903.24	11.98	2300	7.8	6.75	0.92	330	63.0	0.31	853	7.4	1680	<0.0010	<0.0010	0.021	<0.0010	<0.00050	<0.0050	0.0017	<0.0050	<0.010	0.0010	<0.0010	<0.0010	<0.00020	0.31	1.13		
MW-6-062717	6/27/2017	8.22	903.06	15.74	2240	5.2	6.76	0.86	323	61.1	0.50	874	7.1	1700	<0.0010	<0.0010	0.019	<0.0010	<0.00050	<0.0050	0.0018	<0.0050	<0.010										

FIGURES

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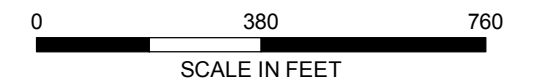


LEGEND

-  MONITORING WELL
-  PIEZOMETRIC OBSERVATION ONLY
-  ASH LANDFILL NO. 322
-  PROPERTY BOUNDARY

NOTE

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



WESTAR ENERGY
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

**ASH LANDFILL NO. 322 MONITORING
WELL LOCATION MAP**

JANUARY 2018
SCALE: AS SHOWN

FIGURE 1