Annual Groundwater Monitoring Report

Public Service Company of Oklahoma

Northeastern 3&4 Power Station

Landfill CCR Management Unit

7300 E HWY 88

Oologah, Oklahoma

January 2021

prepared by:

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1 Riverside Plaza
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PUBLIC SERVICE COMPANY OF OKLAHOMA℠

An AEP Company

BOUNDLESS ENERGY℠

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I. Summary

This *Annual Groundwater Monitoring Report* (Report) has been prepared to report the status of activities for the preceding year for an existing CCR unit at Public Service Company of Oklahoma's (PSO's), a wholly-owned subsidiary of American Electric Power Company (AEP), Northeastern 3&4 Power Station (NPS). The Oklahoma Department of Environmental Quality (ODEQ) CCR rules require that the Annual Groundwater Monitoring Report be posted to the operating record for the preceding year no later than January 31, 2021.

In general, the following activities were completed:

- This CCR Unit began and remained in detection monitoring during 2020.
- Semi-annual groundwater samples were collected and analyzed for detection monitoring Appendix A constituents, as specified in OAC 255:517-9-5 and AEP's *Groundwater Sampling and Analysis Plan*;
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units;
- Groundwater Monitoring Statistical Evaluation Reports to evaluate groundwater data were prepared in accordance with 252:517-9-4 and certified. The statistical process was guided by USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* ("Unified Guidance" USEPA, 2009).
- First semi-annual sampling event:
    - Statistically significant increases (SSIs) for pH in MW-9D and Sulfate in MW-5D and MW-15 were determined based on 2 of 2 sampling conducted September 8, 2020 and statistical evaluation completed December 8, 2020;
    - An Alternate Source Demonstration (ASD) is underway.
- Second semi-annual sampling event:
    - Statistical analysis is underway
- A statistical analysis on the background data was conducted to update the prediction limits;
- NPS continues to evaluate the site for appropriate upgradient/background well placement;

The major components of this annual report, to the extent applicable at this time, are presented in sections that follow:

- A map, aerial photograph or a drawing showing the CCR management unit(s), all groundwater monitoring wells and monitoring well identification numbers;
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a statement as to why that happened;

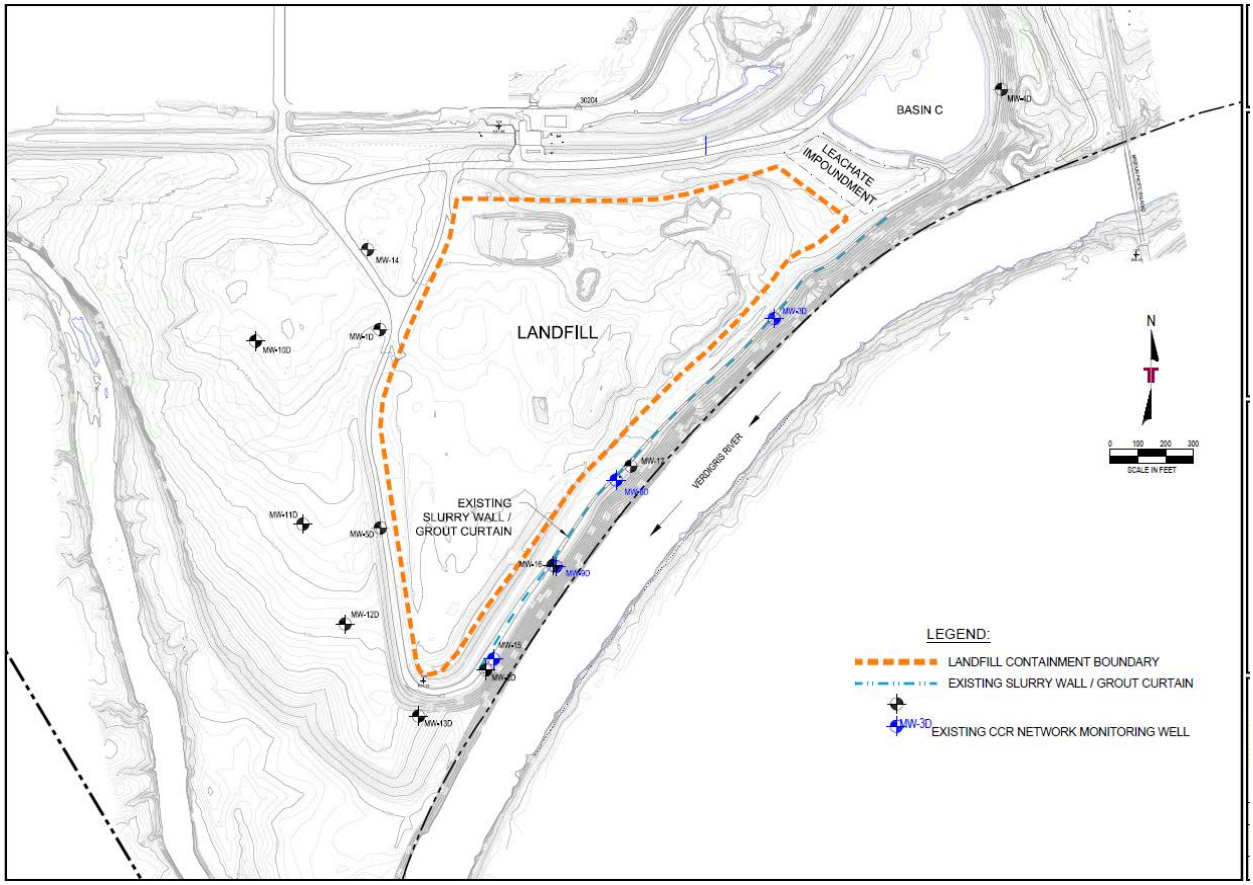
- All of the monitoring data collected, including the rate and direction of groundwater flow, plus a summary showing the number of samples collected per monitoring well, the dates the samples were collected are included in Appendix I;
- Statistically reports are located in Appendix II;
- Field Sheets and Laboratory Reports are located in Appendix III;
- ODEQ's related correspondences are located in Appendix IV.

In addition, this report summarizes key actions completed, and where applicable, describes any problems encountered and actions taken to resolve those problems. The report includes a projection of key activities for the upcoming year.

II. Groundwater Monitoring Well Locations and Identification Numbers

The figure that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations and their corresponding identification numbers.

Landfill Monitoring Wells	
Up Gradient	**Down Gradient**
Pending	MW-1D through MW-6D,
	MW-9D through MW-13D
	MW-14 through MW-17



III. Monitoring Wells Installed or Decommissioned

No monitoring wells were installed or decommissioned.

IV. Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction and Discussion

Appendix I contains tables showing the applicable groundwater data results obtained under OAC 252:517-9-1 through 252:517-9-5. Static water elevation data from each monitoring event are in Appendix I, along with the groundwater velocity, and potentiometric maps developed after each sampling event.

- The groundwater rate and flow direction for the first semi-annual confirmatory sampling event reflects that seen during the first semi-annual initial sampling event.
- The groundwater rate and flow direction for the second semi-annual confirmatory sampling event reflects that seen during the second semi-annual initial sampling.

Appendix III contains the field sheets and laboratory reports for data relevant to this reporting period.

V. Statistical Evaluation completed in 2020

- First semi-annual groundwater sampling event was conducted on June 30, 2020 and 2 of 2 confirmatory sampling was conducted September 8, 2020.
    - SSIs were determined for pH in MW-9D and Sulfate in MW-5D and MW-15.
- Second semi-annual event conducted on October 20, 2020 and 2 of 2 confirmatory sampling was conducted December 16, 2020.
    - Statistical analysis is underway
- Background update calculations were completed based on a minimum of four semiannual detection monitoring events which have been conducted between October 2017 and May 2019. Data from these events, including both initial and verification results, were evaluated for inclusion in the background dataset. The compliance data were reviewed for outliers, which were removed (when appropriate) prior to updating upper prediction limits (UPLs) for each Appendix III parameter to represent background values.
- The available 2020 statistical reports and the updated UPLs report are found in Appendix II.

VI. Alternate Source Demonstrations completed in 2020

ODEQ issued a Notice Of Deficiency (NOD) January 30, 2020 for the boron ASD submitted October 2018, which presented revised statistical results through intra-well analysis. ODEQ agreed that a statistical error had occurred related to inappropriate background wells when using existing MWs 7D and 8D, therefore background concentrations for the landfill could not be established. Prior to instituting an assessment monitoring program, a background well or wells representative of the upper most aquifer must be established. Until these future background wells can be installed and background concentration be established, statistical analysis will be completed on intra-well comparison.

An ASD for the SSIs detected during the first semi-annual groundwater monitoring event is underway and will be submitted within 90 days after the certification of the statistical report dated December 8, 2020 for ODEQ's approval.

VII. Discussion About Transition Between Monitoring Requirements or Alternate Monitoring Frequency

This CCR Unit began and remained in detection monitoring during 2020.

The sampling frequency of twice per year will be maintained for the current monitoring program.

VIII. Other Information Required

Financial Assurance – Corporate Financial Test was accepted by ODEQ in correspondence dated June 30, 2020.

NPS submitted the Hydrogeological Drilling Plan for the Landfill on February 25, 2020 and ODEQ approved the plan on June 23, 2020.

IX. Description of Any Problems Encountered in 2020 and Actions Taken

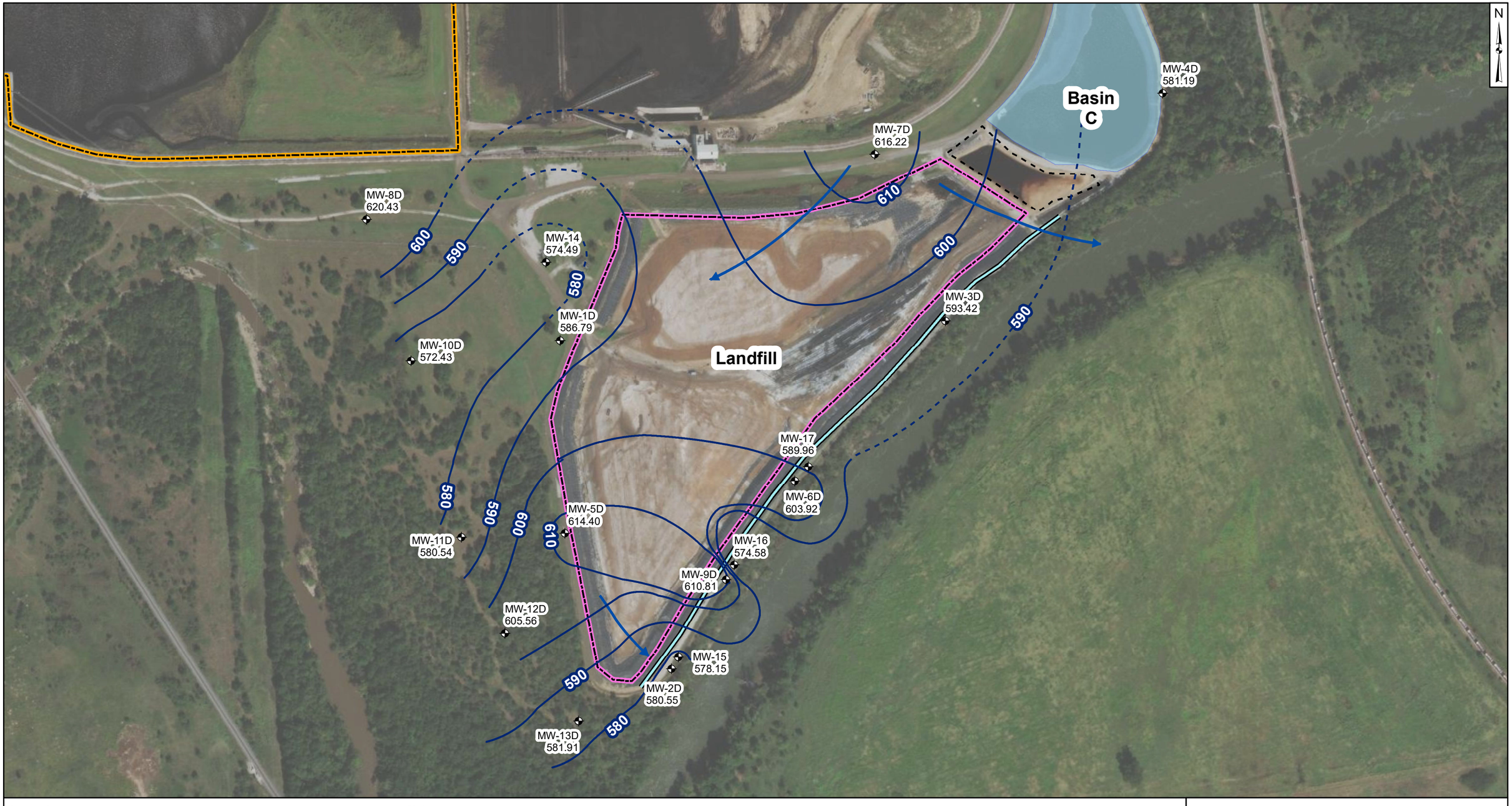
As required by OAC 252:517-9-1(b)(1)(c), the collection of a minimum of eight independent samples for each downgradient well within the monitoring well network, NPS continues to attempt to collect representative groundwater samples from wells 1D, 2D, 10D, 11D, 13D, 14, 16, and 17, which often lack sufficient water volume for sample collection after allowing 24 hours of recharge. During the first semi-annual sampling event, groundwater samples were successfully collected from wells 2D and 14. During the second semi-annual sampling event, a groundwater sample was successfully collected from MW-14.

X. A Projection of Key Activities for the Upcoming Year

- Detection monitoring on a twice per year schedule;
- Submit Financial Assurance;
- Evaluation of the detection monitoring results from a statistical analysis viewpoint, looking for SSIs;
- Complete ASDs for SSIs, as needed;
- Carry out field work approved in the landfill drilling plan;
- Preparation of the next annual groundwater report.

APPENDIX I

Potentiometric Maps and Tables follow, showing the groundwater monitoring data collected, the rate and direction of groundwater flow, and a summary showing the number of samples collected per monitoring well. The dates that the samples were collected also is shown.



Legend

- Groundwater Monitoring Well
- Approximate Groundwater Flow Direction
- Groundwater Elevation Contour
- Groundwater Elevation Contour (Inferred)
- Bottom Ash Pond Impoundment
- Landfill
- Slurry Wall

Notes

- Monitoring well coordinates and water level data (collected June 29-30, 2020) provided by AEP.
- River water height 533.55 ft. above msl at time of data collection (USGS 07178452)
- Groundwater elevation units are feet above mean sea level (ft. msl).
- Only wells screened in the Labette Shale were used for contouring.

400 200 0 400 Feet

Potentiometric Contours - Uppermost Aquifer
June 2020

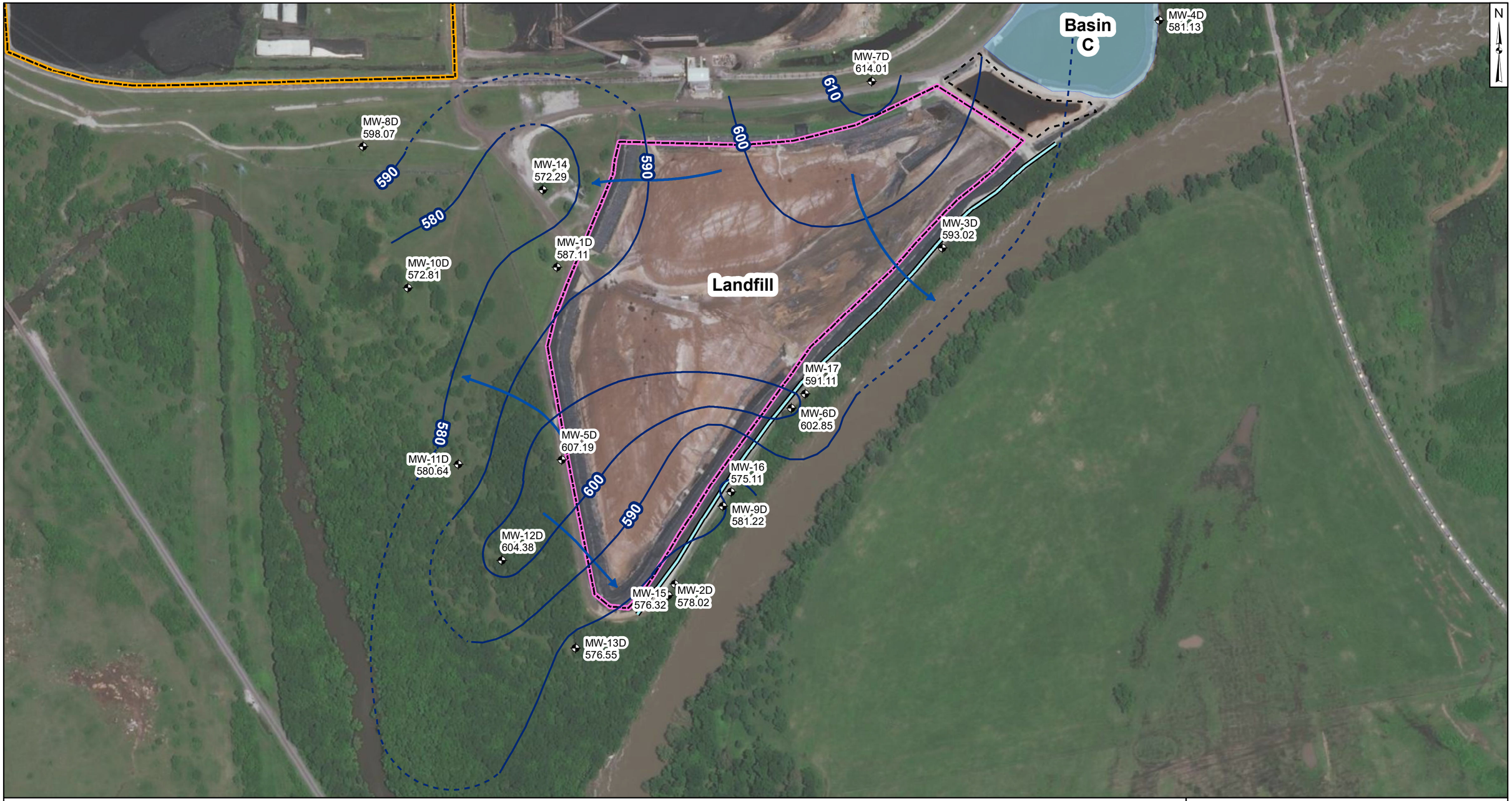
AEP Northeastern Power Plant - Landfill
Oologah, Oklahoma

Geosyntec consultants

Columbus, Ohio | 2020/11/18

Figure **1**

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Northeastern\2020\AEP-Northeastern_LF_2020-06June.mxd. ARevezzo. 11/18/2020. Project/Phase/Task.



Legend

- Groundwater Monitoring Well
- Approximate Groundwater Flow Direction
- Groundwater Elevation Contour
- Groundwater Elevation Contour (Inferred)
- Bottom Ash Pond
- Impoundment
- Landfill
- Slurry Wall

Notes

- Monitoring well coordinates and water level data (collected October 20-21, 2020) provided by AEP.
- River water height 532.54 ft. above msl at time of data collection (USGS 07178452)
- Groundwater elevation units are feet above mean sea level (ft. msl).
- Only wells screened in the Labette Shale were used for contouring.

400 200 0 400
Feet

Potentiometric Contours - Uppermost Aquifer
October 2020

AEP Northeastern Power Plant - Landfill
Oologah, Oklahoma

Geosyntec consultants

Columbus, Ohio | 2021/01/06

Figure **2**

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NE CCR Units

Landfill Distance between wells.

	MW1D	MW2D	MW3D	MW4D	MW5D	MW6D	MW7D	MW8D	MW9D	MW10D	MW11D	MW12D	MW13D	MW14	MW15	MW-16	MW-17
MW1D	-	1310.9	1432.3	2423.7	692.7	1022.1	1379.1	837.6	1071.3	425.4	759.9	1071.5	1400.8	393.3	1262.4	1063.5	1081.8
MW2D		-	1634.9	2820.3	640.46	853.7	2044.8	2024.5	470.4	1458.2	854.0	532.9	284.9	1651.2	96.8	538.6	931.7
MW3D			-	1185.0	1596.7	783.1	642.6	2178.2	1166.8	1869.4	1843.4	1907.6	1932.2	1360.9	1548.4	1095.7	702.8
MW4D				-	2749.0	1975.0	1059.3	2997.7	2365.6	2367.5	2969.9	3084.3	3110.0	2198.6	2735.2	2297.8	1875.8
MW5D					-	887.4	1814.0	1365.3	654.3	795.2	292.2	385.4	701.4	1086.4	658.8	699.6	981.5
MW6D						-	1214.7	1864.0	391.2	1405.8	1155.3	1134.2	1151.9	1181.5	773.9	131.6	11.7
MW7D							-	1942.1	1607.6	1758.5	2006.3	2168.0	2306.8	1139.0	1969.5	1525.8	1167.2
MW8D								-	1885.8	563.4	1244.4	1633.3	2036.8	828.7	2015.9	1902.5	1916.8
MW9D									-	1363.6	895.9	809.8	738.2	1345.5	385.8	78.5	486.6
MW10D										-	702.5	1081.7	1465.2	671.1	1442.0	1371.0	1461.4
MW11D											-	395.4	801.6	1145.4	851.1	969.7	1237.4
MW12D												-	418.7	1473.7	583.2	884.4	1229.6
MW13D													-	1774.2	389.2	837.6	1234.9
MW14														-	1604.9	1309.3	1221.9
MW15															-	470.7	856.8
MW-16																-	396.9
MW-17																	-

Welsh landfill MW monitoring wells

	MW1D	MW2D	MW3D	MW4D	MW5D	MW6D	MW7D	MW8D	MW9D	MW10D	MW11D	MW12D	MW13D	MW14	MW15	MW-16	MW-17
TD(ft bgs)	55.00	33.50	63.04	50.00	55.00	58.22	58.65	63.54	63.09	68.00	48.00	42.00	48.00	42.00	45.00	78.96	74.21
TOC, ft	638.07	638.19	630.65	625.00	636.84	636.66	626.46	629.32	637.04	639.32	628.27	623.67	619.06	640.89	637.71	637.26	636.52

Date

03/16/16	NG	NG	38.08	NG	NG	34.91	13.58	32.39	55.41	NG	NG	NG	NG	75.78	54.94	60.29	57.63
05/16/16	NG	NG	37.04	NG	NG	33.64	29.65	42.78	55.69	NG	NG	NG	NG	76.16	55.99	60.18	54.88
07/20/16	NG	NG	NG	NG	NG	NG	NG	45.93	NG	NG	NG	NG	NG	75.02	60.38	60.41	52.50
09/19/16	NG	NG	37.70	NG	NG	33.75	22.87	52.27	56.02	NG	NG	NG	NG	74.03	61.14	61.11	49.56
10/06/16	NG	NG	37.65	NG	NG	NG	NG	58.6		NG	NG	NG	NG	dry	61.28	dry	dry
01/25/17	NG	NG	37.13	NG	NG	NG	NG	54.25		NG	NG	NG	NG	74.14	54.15	61.73	51.11
03/14/17	NG	NG	37.15	NG	NG	34.80	21.81	46.88	57.59	NG	NG	NG	NG	37.29	64.32	62.24	49.92
05/17/17	NG	NG	37.22	NG	NG	34.26	7.63	54.12	56.35	NG	NG	NG	NG	72.09	45.41	58.44	54.37
06/15/17	NG	NG	37.26	NG	NG	33.22	9.15	59.79	56.29	NG	NG	NG	NG	76.13	55.76	60.25	55.94
06/27/17	NG	NG	37.31	NG	NG	33.29	27.50	61.46	60.35	NG	NG	NG	NG	77.92	58.64	62.67	55.61
07/12/17	NG	NG	38.02	NG	NG	34.06	43.72	60.87	60.36	NG	NG	NG	NG	77.63	59.81	61.61	57.03
10/11/17	55.24	57.89	37.42	43.26	27.37	33.58	57.38	61.51	61.89	69.04	47.86	18.56	41.32	75.94	59.45	61.62	56.42
05/01/18	54.04	55.13	37.07	43.15	22.20	33.95	13.93	22.36	57.03	68.32	47.68	15.62	34.78	72.21	55.85	61.29	52.11
05/29/18	53.76	58.41	31.77	43.54	29.73	33.66	13.12	21.71	56.66	68.15	47.57	18.75	40.69	71.65	60.04	61.18	51.54
10/15/18	54.45	60.59		43.49	32.01					69.11	48.31	19.97	45.62	75.58	61.94	61.11	56.02
10/22/18			37.09	43.41	41.92	34.34	13.08	32.72	56.6			19.85			60.80		
1/15/2019	54.06	49.60	36.69	42.90	25.38	34.05	13.66	31.73	56.52	68.77	48.26	13.14	45.41	75.30	50.42	60.02	54.38
2/27/2019	53.80	56.68	36.98	43.23	24.81	34.12	12.38	26.23	55.76	68.64	48.26	16.95	42.84	74.45	58.24	62.66	53.65
8/26/2019	52.71	57.91	37.34	43.73	24.20	32.83	11.45	23.13	53.55	67.96	48.11	18.66	37.42	68.82	59.72	62.60	50.89
6/29/2020	51.28	57.64	37.23	43.81	22.44	32.74	10.24	25.14	47.34	66.89	47.73	18.11	37.15	66.40	59.56	62.68	46.56
9/8/2020			37.16		29.81	33.51			55.43					60.55			
10/20/2020	50.96	60.17	37.63	43.87	29.65	33.81	12.45	31.25	55.82	66.51	47.63	19.29	42.51	68.60	61.39	62.15	45.41
12/16/2020			36.90			33.36			55.46						61.44		

NE Landfill

Hydraulic gradient. Use row **68** 10/20/2020

	MW1D	MW2D	MW3D	MW4D	MW5D	MW6D	MW7D	MW8D	MW9D	MW10D	MW11D	MW12D	MW13D	MW14	MW15	MW-16	MW-17	
MW1D	-	0.00693401	0.004126	0.002467	0.028989	0.01539906	0.019506	0.0130855	0.005498	0.0336154	0.0085145	0.0161177	0.0075387	0.037684	0.008547	0.01128329	0.00369750	max
MW2D		-	0.009175	0.001103	0.045545	0.02908482	0.017601	0.0099039	0.006803	0.0035728	0.0030678	0.0494652	0.0051604	0.0034702		0.0054033	0.01404913	min
MW3D			-	0.010033	0.008875	0.01255348	0.0326652	0.0023184	0.0101134	0.0108107	0.0067158	0.005955	0.0085242	0.0152322	0.010785	0.01634527	0.00271894	
MW4D				-	0.00948	0.01099775	0.03104	0.005651	3.805E-05	0.0035143	0.000165	0.0075382	0.0014727	0.0040208	0.001759	0.00261995	0.00532053	
MW5D					-	0.00489064	0.0037596	0.0066798	0.0396919	0.0432366	0.0908718	0.0072904	0.0436834	0.0321256	0.046861	0.04585609	0.01638241	
MW6D						-	0.0091877	0.0025644	0.0552872	0.0213692	0.0192239	0.0013489	0.0228321	0.0258665	0.03428			
MW7D							-	0.0082076	0.0203964	0.0234288	0.0166329	0.0044418	0.0162389	0.0366299	0.019137	0.02549466	0.01961943	
MW8D								-	0.0089353	0.0448317	0.014007	0.0038635	0.0105657	0.0311086	0.010789	0.01206827	0.00363105	
MW9D									-	0.0061677	0.0006474	0.0286	0.0063263	0.0066371	0.012701		0.02032470	
MW10D										-	0.0111454	0.0291858	0.0025525	0.0007748	0.002434	0.00167767	0.01252258	
MW11D											-	0.0600344	0.0051023	0.00729	0.005076	0.00570274	0.00846129	
MW12D												-	0.0664708	0.0217759	0.048112	0.03309738	0.01079256	6
MW13D													-	0.0024011	0.000591	0.00171924	0.01179061	9
MW14														-	0.002511	0.00215386	0.01540249	5
MW15															-	0.0025709	0.0172627	
MW-16																-	0.0403094	
MW-17																		

effective porosity(n) = 0.045 0.05
Hydraulic conductivity of aquifer (k) = 2 2.5
Max gradient (dh/dl)

max	**0.091**	**10/20/2020**
min	0.000038	10/20/2020

$$v = k\frac{(dh\ /\ dl)}{n}$$

Groundwater elevations, sea level

	MW1D	MW2D	MW3D	MW4D	MW5D	MW6D	MW7D	MW8D	MW9D	MW10D	MW11D	MW12D	MW13D	MW14	MW15	MW-16	MW-17	**Max**	**Min**
TOC, ft	638.07	638.19	630.65	625.00	636.84	636.66	626.46	629.32	637.04	639.32	628.27	623.67	619.06	640.89	637.71	637.26	636.52		
tos, ft	594.07	589.49	580.95	585.30	592.12	591.74	581.21	579.37	587.34	581.62	590.57	591.97	584.36	575.39	576.66	586.46	591.02		

	MW1D	MW2D	MW3D	MW4D	MW5D	MW6D	MW7D	MW8D	MW9D	MW10D	MW11D	MW12D	MW13D	MW14	MW15	MW-16	MW-17			**(dh/dl) gradient**	max	Min	**v(ft/yr)**	
03/16/16	NG	NG	592.57	NG	NG	601.75	612.88	596.93	581.63	NG	NG	NG	NG	565.11	582.77	576.97	578.89	612.88	565.11	0.051	**2.83**			
05/16/16	NG	NG	593.61	NG	NG	603.02	596.81	586.54	581.35	NG	NG	NG	NG	564.73	581.72	577.08	581.64	603.02	564.73	0.055	**3.06**			
07/20/16	NG	NG	NG	NG	NG	NG	NG	583.39	NG	NG	NG	NG	NG	565.87	577.33	576.85	584.02	584.02	565.87	0.020	**1.11**			
09/19/16	NG	NG	592.95	NG	NG	602.91	603.59	577.05	581.02	NG	NG	NG	NG	566.86	576.57	576.15	586.96	603.59	566.86	0.056	**3.11**			
10/06/16	NG	NG	593.00	NG	NG	NG	NG	570.72	NG	NG	NG	NG	NG	dry	576.43	dry	dry	576.43	570.72	0.010	**0.56**			
01/25/17	NG	NG	593.52	NG	NG	NG	NG	575.07	NG	NG	NG	NG	NG	566.75	583.56	575.53	585.41	585.41	566.75	0.019	**1.06**			
03/14/17	NG	NG	593.50	NG	NG	601.86	604.65	582.44	579.45	NG	NG	NG	NG	603.60	573.39	575.02	586.60	604.65	573.39	0.057	**3.17**			
05/17/17	NG	NG	593.43	NG	NG	602.40	618.83	575.20	580.69	NG	NG	NG	NG	568.80	592.30	578.82	582.15	618.83	568.80	0.055	**3.06**			
06/15/17	NG	NG	593.39	NG	NG	603.44	617.31	569.53	580.75	NG	NG	NG	NG	564.76	581.95	577.01	580.58	617.31	564.76	0.058	**3.22**			
06/27/17	NG	NG	593.34	NG	NG	603.37	598.96	567.86	576.69	NG	NG	NG	NG	562.97	579.07	574.59	580.91	603.37	562.97	0.068	**3.78**			
07/12/17	NG	NG	592.63	NG	NG	602.60	582.74	568.45	576.68	NG	NG	NG	NG	563.26	577.90	575.65	579.49	602.60	563.26	0.066	**3.67**			
10/11/17	582.83	580.30	593.23	581.74	609.47	603.08	569.08	567.81	575.15	570.28	580.41	605.11	577.74	564.95	578.26	575.64	580.10	609.47	564.95	0.099	**5.50**	0.007167		
05/01/18	584.03	583.06	593.58	581.85	614.64	602.71	612.53	606.96	580.01	571.00	580.59	608.05	584.28	568.68	581.86	575.97	584.41	614.64	568.68	0.117	**6.50**	0.000222		
05/29/18	584.31	579.78	598.88	581.46	607.11	603.00	613.34	607.61	580.38	571.17	580.70	604.92	578.37	569.24	577.67	576.08	584.98	613.34	569.24	0.090	**5.00**	0.012533		
10/15/18	583.62	577.60	NG	581.51	604.83	NG	NG	NG	NG	570.21	579.96	603.70	573.44	565.31	575.77	576.15	580.50	604.83	565.31	0.090	**5.00**			
10/22/18	NG	NG	593.56	581.59	594.92	602.32	613.38	596.60	580.44	NG	NG	603.82	NG	NG	576.91	NG	NG	613.38	576.91	0.056	**3.11**			
01/15/19	584.01	588.59	593.96	582.10	611.46	602.61	612.80	597.59	580.52	570.55	580.01	610.53	573.65	565.59	587.29	577.24	582.14	612.80	565.59	0.108	**6.00**	0.001167	2 of 2	
02/27/19	584.27	581.51	593.67	581.77	612.03	602.54	614.08	603.09	581.28	570.68	580.01	606.72	576.22	566.44	579.47	574.60	582.87	614.08	566.44	0.110	**6.11**	0.005111	1H 2019	
08/26/19	585.36	580.28	593.31	581.27	612.64	603.83	615.01	606.19	583.49	571.36	580.16	605.01	581.64	572.07	577.99	574.66	585.63	615.01	571.36	0.111	**6.17**	0.003889	2H 2019	
06/29/20	586.79	580.55	593.42	581.19	614.40	603.92	616.22	604.18	589.70	572.43	580.54	605.56	581.91	574.49	578.15	574.58	589.96	616.22	572.43	0.116	**6.44**	0.000667	1H 2020	
09/08/20			593.49		607.03	603.15			581.61						577.16								2 of 2	1H 2020
10/20/20	587.11	578.02	593.02	581.13	607.19	602.85	614.01	598.07	581.22	572.81	580.64	604.38	576.55	572.29	576.32	575.11	591.11	614.01	572.29	0.090	**5.00**	0.000667	2H 2020	
12/16/20			593.75			603.30			581.58						576.27			603.30	576.27				2 of 2	2H 2020

average LGWV 3.97 ft/yr

Table 1: Residence Time Calculation Summary
Northeastern Landfill

Geosyntec Consultants, Inc.

CCR Management Unit	Monitoring Well	Well Diameter (inches)	2020-06		2020-10	
			Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)
Landfill	MW-3D [2]	2.0	0.8	77	0.8	80
	MW-4D [2]	2.0	0.8	75	0.8	78
	MW-5D [2]	2.0	2.1	29	1.5	40
	MW-6D [2]	2.0	1.9	31	2.9	21
	MW-7D [1]	2.0	1.1	54	1.0	58
	MW-8D [1]	2.0	2.7	23	1.5	41
	MW-9D [2]	2.0	10.2	6	0.9	70
	MW-12D [2]	2.0	1.2	49	1.8	34
	MW-15 [2]	2.0	2.5	24	1.0	63

Notes:
[1] - Observation Well
[2] - Downgradient Well

Table 1 - Groundwater Data Summary: MW-2D
Northeastern - LF
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/2/2018	Background	10.5	7.52	14	2.028	10.6	628	1,206
5/30/2018	Background	10.1	19.2	--	--	10.4	--	--
2/27/2019	Background	9.67	9.26	16.4	1.56	11.0	612	1,218
8/26/2019	Background	10.7	14.3	12	1.661	12.8	591	1,236
6/29/2020	Background	11.3	11.9	11.5	1.91	13.7	732	1,310

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-2D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
5/2/2018	Background	2.12 J	37.15	9.62	< 0.02 U	0.3 J	< 0.23 U	0.36 J	1.259	2.028	< 0.68 U	0.0006 J	0.046	588	82.77	1.1 J
5/30/2018	Background	1.95 J	34.61	29.17	< 0.02 U	0.44 J	1.4	0.3 J	--	--	1.28 J	0.00125	0.04	552	72.31	2

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-3D
Northeastern - LF
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
1/25/2017	Background	0.919	111	16	<1 U	7.5	174	658
3/14/2017	Background	0.913	120	14	1	--	175	648
4/27/2017	Background	0.972	110	14	0.77 J	7.9	181	662
5/18/2017	Background	0.789	163	12	< 0.083 U	--	192	598
6/16/2017	Background	0.873	137	12	0.8472 J	7.3	225	742
6/28/2017	Background	0.84	194	13	0.7591 J	7.3	232	766
7/12/2017	Background	0.864	129	13	< 0.083 U	6.9	210	728
8/4/2017	Background	0.856	135	12	0.7381 J	6.7	227	710
8/17/2017	Background	0.841	138	23	< 0.083 U	6.8	213	728
8/30/2017	Background	0.84	136	12	0.7144 J	6.9	216	696
9/13/2017	Background	0.877	152	11	< 0.083 U	6.8	212	848
9/20/2017	Background	0.853	139	11	< 0.083 U	6.9	214	724
10/11/2017	Detection	0.878	134	13	< 0.083 U	6.9	218	722
5/2/2018	Detection	1.08	127	13	0.757 J	7.3	196	736
5/30/2018	Detection	0.952	129	13	0.896 J	7.5	214	724
10/22/2018	Detection	1.02	142	14.89	1.09	7.2	210.57	702
11/28/2018	Detection	0.964	--	--	0.648 J	8.0	--	--
2/27/2019	Detection	0.973	127	13.2	0.71	7.8	223	700
5/7/2019	Detection	1.56	--	--	--	--	--	--
8/26/2019	Detection	0.979	130	12	0.608 J	8.5	181	686
12/3/2019	Detection	--	--	--	--	7.4	--	--
6/30/2020	Detection	0.941	116	13.7	0.77	8.6	206	680
9/8/2020	Detection	--	--	--	--	7.8	--	--
10/21/2020	Detection	0.833	120	12.6	0.77	8.7	189	667
12/16/2020	Detection	--	--	--	--	6.9	--	--

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-3D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
1/25/2017	Background	<5 U	<5 U	111	<1 U	<1 U	2.0	<5 U	2.153	<1 U	<5 U	0.0170	<0.025 U	<5 U	<5 U	<2 U
3/14/2017	Background	<5 U	<5 U	100	<1 U	<1 U	<1 U	<5 U	1.456	1.0	<5 U	0.0160	<0.025 U	<5 U	<5 U	<2 U
4/27/2017	Background	< 0.93 U	3.3 J	89.64	< 0.02 U	0.26 J	0.35 J	1.3 J	0.419	0.77 J	< 0.68 U	0.01508	< 0.005 U	1.97 J	< 0.99 U	< 0.86 U
5/18/2017	Background	< 0.93 U	10.64	1,040	0.92 J	0.61 J	18.06	5.32	2.443	< 0.083 U	3.24 J	0.01943	0.01 J	4.15 J	< 0.99 U	< 0.86 U
6/16/2017	Background	1.44 J	1.48 J	150	0.08 J	0.22 J	1.23	1.09 J	1.706	0.8472 J	0.83 J	0.01451	< 0.005 U	3.04 J	< 0.99 U	< 0.86 U
6/28/2017	Background	< 0.93 U	< 1.05 U	97.64	0.09 J	0.45 J	4.8	2.69 J	2.431	0.7591 J	2.99 J	0.01836	0.007 J	79.28	< 0.99 U	< 0.86 U
7/12/2017	Background	< 0.93 U	< 1.05 U	118	0.05 J	0.08 J	0.41 J	0.82 J	14.283	< 0.083 U	< 0.68 U	0.01435	< 0.005 U	3.22 J	< 0.99 U	< 0.86 U
8/4/2017	Background	< 0.93 U	< 1.05 U	124	0.07 J	0.21 J	0.82 J	0.84 J	2.242	0.7381 J	0.8 J	0.01344	0.013 J	3.08 J	< 0.99 U	< 0.86 U
8/17/2017	Background	< 0.93 U	< 1.05 U	274	0.17 J	0.24 J	3.11	1.83 J	2.328	< 0.083 U	< 0.68 U	0.01495	< 0.005 U	2.91 J	1 J	< 0.86 U
8/30/2017	Background	< 0.93 U	2.6 J	244	0.16 J	0.33 J	2.36	1.54 J	2.215	0.7144 J	< 0.68 U	0.01465	< 0.005 U	2.68 J	< 0.99 U	< 0.86 U
9/13/2017	Background	< 0.93 U	4.52 J	430	0.35 J	0.49 J	6.32	2.97 J	1.566	< 0.083 U	1.55 J	0.01639	< 0.005 U	2.74 J	< 0.99 U	1.02 J
9/20/2017	Background	1.63 J	1.14 J	267	0.17 J	0.21 J	2.74	1.41 J	2.162	< 0.083 U	< 0.68 U	0.01508	< 0.005 U	3.33 J	< 0.99 U	< 0.86 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-4D
Northeastern - LF
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/2/2018	Background	1.21	192	22	< 0.083 U	7.1	328	984
5/30/2018	Background	1.27	164	20	0.4188 J	7.0	279	910
6/27/2018	Background	1.16	177	20	< 0.083 U	7.9	258	882
7/31/2018	Background	1.04	196	31	< 0.083 U	7.8	294	856
8/30/2018	Background	1.26	183	--	--	8.1	--	886
9/19/2018	Background	1.13	174	31	< 0.083 U	7.8	260	884
10/15/2018	Background	0.656	195	37.9	< 0.083 U	7.6	289.3	846
10/22/2018	Background	--	--	39.8	< 0.083 U	7.9	306	--
11/28/2018	Background	1.24	193	27	0.3357 J	7.9	295	972
1/15/2019	Detection	1.16	183	24.6	0.37 J	7.5	417.6	--
2/27/2019	Detection	1.42	187	31.2	0.30	7.7	463	696
5/7/2019	Detection	--	--	--	--	--	419	--
8/26/2019	Detection	0.987	184	23	0.171 J	8.1	274	830
6/30/2020	Detection	0.988	176	22.2	0.27	8.4	336	867
10/21/2020	Detection	0.761	163	24.3	0.27	8.4	272	813

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-4D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
5/2/2018	Background	4.05 J	2.3 J	171	< 0.02 U	0.14 J	1.37	2.36 J	1.625	< 0.083 U	1.47 J	0.00533	< 0.005 U	6.74	< 0.99 U	1.19 J
5/30/2018	Background	< 0.93 U	< 1.05 U	173	< 0.02 U	< 0.07 U	< 0.23 U	1.28 J	1.991	0.4188 J	< 0.68 U	0.0033	< 0.005 U	4.91 J	< 0.99 U	2.94
6/27/2018	Background	< 0.93 U	< 1.05 U	167	< 0.02 U	< 0.07 U	1.93	1.82 J	1.244	< 0.083 U	< 0.68 U	0.00491	< 0.005 U	4.64 J	< 0.99 U	2.94
7/31/2018	Background	0.05	1.25	173	0.01 J	0.04	< 7 U	0.521	1.506	< 0.083 U	0.130	0.00315	< 0.005 U	4.59	0.2	0.02 J
8/30/2018	Background	0.1	1.6	163	0.049	0.11	0.551	0.807	0.912	--	0.804	0.00296	0.007 J	4.48	0.3	0.02 J
9/19/2018	Background	0.04 J	1.20	177	0.02 J	0.03 J	0.273	0.551	3.91	< 0.083 U	0.595	0.00289	< 0.005 U	3.71	0.2	< 0.1 U
10/15/2018	Background	0.15	2.28	166	0.06 J	0.16	0.872	0.873	3.056	< 0.083 U	1.41	0.00336	< 0.005 U	4.58	0.3	< 0.1 U
10/22/2018	Background	--	--	--	--	--	--	--	--	< 0.083 U	--	--	--	--	--	--
11/28/2018	Background	< 0.1 U	1.31	171	< 0.1 U	0.06 J	0.3 J	0.677	1.629	0.3357 J	0.3 J	0.00378	< 0.005 U	8 J	0.2 J	< 0.5 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-5D
Northeastern - LF
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/2/2018	Background	0.476	132	25	0.703 J	7.3	126	636
5/30/2018	Background	0.468	136	24	0.711 J	7.2	113	628
6/27/2018	Background	0.478	134	26	0.7487 J	8.2	122	658
7/31/2018	Background	0.491	142	30	0.8769 J	8.3	662	628
8/30/2018	Background	0.52	158	--	--	8.1	--	648
9/19/2018	Background	0.444	156	30	0.7519 J	7.7	134	662
10/15/2018	Background	0.439	141	30.2	0.845 J	7.8	138.7	636
10/22/2018	Background	--	--	30.3	0.806 J	8.0	138	--
11/28/2018	Background	0.612	143	24	0.371 J	8.1	143	614
1/15/2019	Detection	0.540	157	24	0.316 J	7.8	127.6	--
2/27/2019	Detection	0.531	130	26.7	0.50	8.5	153	616
5/7/2019	Detection	--	--	--	--	--	158	--
8/26/2019	Detection	0.568	146	24	0.412 J	9.8	134	670
12/3/2019	Detection	--	--	--	--	7.2	--	--
6/29/2020	Detection	0.508	124	26.7	0.57	8.7	165	641
9/8/2020	Detection	--	--	--	--	8.2	176	--
10/21/2020	Detection	0.469	122	26.3	0.54	8.8	158	655

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-5D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
5/2/2018	Background	2.91 J	1.24 J	127	< 0.02 U	0.36 J	0.59 J	1.14 J	2.449	0.703 J	1.01 J	0.01243	< 0.005 U	1.33 J	1.35 J	1.25 J
5/30/2018	Background	< 0.93 U	< 1.05 U	139	< 0.02 U	< 0.07 U	1.53	1.31 J	3.06	0.711 J	1.09 J	0.01199	< 0.005 U	< 0.29 U	< 0.99 U	< 0.86 U
6/27/2018	Background	2.5 J	< 1.05 U	126	< 0.02 U	< 0.07 U	0.8 J	0.63 J	2.512	0.7487 J	< 0.68 U	0.01208	< 0.005 U	0.96 J	< 0.99 U	2
7/31/2018	Background	0.16	1.27	143	0.103	0.21	0.355	0.482	2.876	0.8769 J	1.43	0.011	< 0.005 U	1.21	0.4	0.02 J
8/30/2018	Background	0.1	0.98	111	0.076	0.1	0.518	0.3	2.906	--	0.706	0.0112	0.006 J	1.24	0.3	0.04 J
9/19/2018	Background	0.13	1.18	118	0.08 J	0.09	0.745	0.336	5.163	0.7519 J	0.720	0.0107	< 0.005 U	2 J	0.4	< 0.1 U
10/15/2018	Background	0.07 J	0.99	103	0.07 J	0.08	0.423	0.289	5.319	0.845 J	0.379	0.00977	< 0.005 U	1 J	0.3	< 0.1 U
10/22/2018	Background	--	--	--	--	--	--	--	--	0.806 J	--	--	--	--	--	--
11/28/2018	Background	< 0.1 U	1.15	113	< 0.1 U	0.06 J	0.5 J	0.324	2.393	0.371 J	0.4 J	0.0121	< 0.005 U	0.2 J	0.3 J	< 0.5 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-6D
Northeastern - LF
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
6/16/2017	Background	3.51	201	28	0.8054 J	7.5	508	1,054
6/28/2017	Background	0.877	133	29	0.7596 J	7.9	524	1,024
7/13/2017	Background	3.49	218	30	< 0.083 U	7.3	504	1,044
8/4/2017	Background	3.64	222	31	0.7656 J	6.4	532	1,022
8/17/2017	Background	3.55	211	30	0.729 J	6.9	509	1,016
8/30/2017	Background	3.41	210	30	0.7158 J	7.2	522	986
9/13/2017	Background	2.96	237	32	0.5406 J	7.1	521	1,140
9/20/2017	Background	3.81	196	32	< 0.083 U	7.1	505	1,008
10/11/2017	Detection	3.74	165	29	0.9597 J	6.9	545	1,032
1/22/2018	Detection	4.24	--	--	0.76 J	6.9	494	--
5/2/2018	Detection	3.52	173	31	0.806 J	7.3	406	1,062
5/30/2018	Detection	3.35	269	32	0.9218 J	7.4	401	1,090
10/22/2018	Detection	4.34	237	31.68	1.28	7.3	471.81	1,152
11/28/2018	Detection	--	--	--	0.844 J	7.7	--	--
2/27/2019	Detection	3.63	360	26.9	0.89	7.6	496	1,144
5/7/2019	Detection	--	185	--	--	--	--	1,038
8/26/2019	Detection	2.88	181	13	0.634 J	8.6	401	1,044
12/3/2019	Detection	--	--	--	--	7.5	--	--
6/30/2020	Detection	3.07	180	24.9	0.76	8.8	533	1,080
9/8/2020	Detection	--	--	--	--	8.0	--	--
10/21/2020	Detection	3.00	170	29.9	0.75	8.7	426	1,060
12/16/2020	Detection	--	--	--	--	7.1	--	--

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-6D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
6/16/2017	Background	< 0.93 U	1.99 J	113	0.18 J	0.8 J	5.99	3.73 J	1.822	0.8054 J	3.48 J	0.02203	0.012 J	85.01	< 0.99 U	< 0.86 U
6/28/2017	Background	1.28 J	< 1.05 U	170	0.06 J	0.37 J	0.86 J	1.09 J	1.917	0.7596 J	0.76 J	0.01356	< 0.005 U	2.79 J	< 0.99 U	< 0.86 U
7/13/2017	Background	< 0.93 U	< 1.05 U	107	0.22 J	0.56 J	6.82	3.82 J	1.784	< 0.083 U	5	0.02244	0.007 J	61.81	< 0.99 U	< 0.86 U
8/4/2017	Background	< 0.93 U	< 1.05 U	128	0.22 J	0.93 J	6.62	3.39 J	1.115	0.7656 J	4.96 J	0.01921	0.016 J	82.11	< 0.99 U	< 0.86 U
8/17/2017	Background	1.26 J	1.18 J	99.54	0.19 J	0.44 J	6.77	3.07 J	1.155	0.729 J	3.25 J	0.01925	0.011 J	81.32	< 0.99 U	< 0.86 U
8/30/2017	Background	< 0.93 U	2.06 J	103	0.22 J	0.36 J	6.68	3.03 J	1.057	0.7158 J	2.5 J	0.01829	< 0.005 U	85.75	< 0.99 U	< 0.86 U
9/13/2017	Background	< 0.93 U	1.19 J	109	0.31 J	0.49 J	8.15	3.71 J	1.377	0.5406 J	3.28 J	0.02105	< 0.005 U	58	< 0.99 U	< 0.86 U
9/20/2017	Background	1.18 J	1.93 J	75.04	0.14 J	0.22 J	3.86	2.27 J	1.43	< 0.083 U	2.33 J	0.01701	< 0.005 U	81	< 0.99 U	< 0.86 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-9D
Northeastern - LF
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
6/16/2017	Background	7.09	229	100	0.9857 J	7.1	781	1,458
6/28/2017	Background	7.01	191	232	0.8986 J	7.7	876	1,114
7/12/2017	Background	7.63	244	98	2.191	7.4	1,048	2,146
8/4/2017	Background	7.59	337	60	0.6947 J	7.0	1,217	2,256
8/17/2017	Background	7.46	328	216	0.681 J	7.1	1,193	2,486
8/30/2017	Background	6.93	354	64	< 0.083 U	7.3	1,192	2,392
9/13/2017	Background	6.78	366	293	0.37 J	7.2	1,244	2,826
10/4/2017	Background	6.68	304	180	< 0.083 U	7.3	1,079	2,296
10/11/2017	Detection	7.07	288	314	1.5191	7.1	1,075	2,188
1/22/2018	Detection	7.43	--	--	--	7.1	--	--
10/22/2018	Detection	7.19	199	106	0.6 J	7.1	519.42	1,258
2/27/2019	Detection	6.49	155	28.9	0.89	7.6	555	1,174
8/26/2019	Detection	6.95	136	24	0.758 J	8.8	526	1,084
12/3/2019	Detection	--	--	--	--	7.6	--	--
6/30/2020	Detection	6.51	128	26.2	0.95	10.9	602	1,070
9/8/2020	Detection	--	--	--	--	8.6	--	--
10/21/2020	Detection	6.12	129	25.3	0.97	8.9	547	1,160
12/16/2020	Detection	--	--	--	--	7.5	--	--

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-9D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
6/16/2017	Background	< 0.93 U	< 1.05 U	188	0.32 J	0.81 J	12.34	6.18	0.931	0.9857 J	7.02	0.02386	0.009 J	173	5	< 0.86 U
6/28/2017	Background	< 0.93 U	< 1.05 U	58.15	< 0.02 U	0.26 J	0.89 J	7.14	--	0.8986 J	1.24 J	0.01647	< 0.005 U	166	< 0.99 U	< 0.86 U
7/12/2017	Background	< 0.93 U	< 1.05 U	69.89	0.05 J	< 0.07 U	4.09	5.69	--	2.191	2.36 J	0.02221	< 0.005 U	151	1.32 J	< 0.86 U
8/4/2017	Background	< 0.93 U	< 1.05 U	132	0.17 J	0.54 J	7.15	7.34	--	0.6947 J	4.26 J	0.02155	0.017 J	117	3.57 J	< 0.86 U
8/17/2017	Background	< 0.93 U	< 1.05 U	196	0.22 J	0.25 J	9.52	8.17	--	0.681 J	5.33	0.02401	0.011 J	98.19	3.53 J	< 0.86 U
8/30/2017	Background	< 0.93 U	< 1.05 U	323	0.37 J	0.91 J	20.06	15.08	--	< 0.083 U	9.27	0.02964	0.016 J	93.84	2.94 J	< 0.86 U
9/13/2017	Background	< 0.93 U	< 1.05 U	399	0.4 J	0.68 J	13.34	12.88	--	0.37 J	8.28	0.03257	0.016 J	78.39	2.8 J	< 0.86 U
10/4/2017	Background	< 0.93 U	< 1.05 U	410	0.43 J	2.4	14.79	8.38	--	< 0.083 U	9.69	0.03222	0.015 J	73.77	3.83 J	< 0.86 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-12D
Northeastern - LF
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
3/15/2017	Background	--	76.9	16	2	--	613	1,142
5/2/2018	Background	8.63	184	17	2.199	7.4	541	1,044
5/30/2018	Background	8.35	89.9	91	2.379	7.7	542	1,088
6/27/2018	Background	8.45	74.9	17	1.988	8.2	586	1,070
7/31/2018	Background	8.72	108	22	2.6173	8.7	662	1,034
8/30/2018	Background	9.71	141	--	--	9.2	--	1,050
9/19/2018	Background	9.02	110	21	2.8416	8.1	582	1,052
10/15/2018	Background	8.68	70.0	21	2.99	9.4	561.2	1,060
10/22/2018	Background	--	--	19.44	2.8	9.0	504.3	--
11/28/2018	Background	9.69	103	16	2.2238	8.9	570	1,068
1/15/2019	Detection	9.08	68.0	14.6	2.028	8.1	437.4	--
2/27/2019	Detection	8.88	64.7	16.8	2.11	8.5	564	1,014
8/26/2019	Detection	8.90	96.3	14	1.6	8.7	540	1,018
6/29/2020	Detection	8.04	82.2	15.0	1.92	8.8	602	945
10/21/2020	Detection	7.19	118	16.1	2.06	9.1	585	1,060

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-12D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
3/15/2017	Background	<5 U	<5 U	31.0	<1 U	<1 U	<1 U	<5 U	- -	2.0	<5 U	- -	<0.025 U	- -	<5 U	<2 U
5/2/2018	Background	<0.93 U	1.56 J	121	0.13 J	0.8 J	7.95	3.52 J	1.625	2.199	7.03	0.00841	0.013 J	693	4.5 J	<0.86 U
5/30/2018	Background	< 0.93 U	1.24 J	77.75	< 0.02 U	0.25 J	2.74	1.49 J	1.213	2.379	3.04 J	0.00608	< 0.005 U	667	3.88 J	2.2
6/27/2018	Background	< 0.93 U	< 1.05 U	36.18	< 0.02 U	< 0.07 U	< 0.23 U	0.39 J	1.331	1.988	< 0.68 U	0.00541	< 0.005 U	666	1.55 J	1.99 J
7/31/2018	Background	0.11	3.00	42.0	0.053	0.07	0.414	0.674	0.721	2.6173	2.32	0.006	< 0.005 U	818	1.7	0.106
8/30/2018	Background	0.2	3.39	65.8	0.097	0.31	1.82	2.17	3.137	--	5.43	0.00396	< 0.005 U	872	3.1	0.241
9/19/2018	Background	0.36	4.67	82.6	0.1 J	0.33	2.03	1.57	4.417	2.8416	5.18	0.00410	0.012 J	828	2.9	0.2 J
10/15/2018	Background	0.43	6.46	50.2	0.06 J	0.20	1.60	1.31	3.541	2.99	3.51	0.00308	0.007 J	774	4.6	0.3 J
11/28/2018	Background	0.3 J	3.99	71.7	0.1 J	0.33	1.70	0.989	1.486	2.2238	4.12	0.00483	0.007 J	744	1.9	< 0.5 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-13D
Northeastern - LF
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
3/15/2017	Background	--	203	7	< 1 U	--	402	1,116
5/2/2018	Background	1.08	172	5	< 0.083 U	7.1	354	1,064
5/30/2018	Background	0.864	171	6	0.4361 J	6.9	343	1,068
6/27/2018	Background	1.35	212	--	--	--	--	--
6/29/2020	Background	0.954	188	4.68	0.32	8.3	476	1,100

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-13D
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
3/15/2017	Background	< 5 U	< 5 U	64	< 1 U	< 1 U	2	< 5 U	--	< 1 U	< 5 U	--	< 0.025 U	--	< 5 U	< 2 U
5/2/2018	Background	< 0.93 U	< 1.05 U	48.84	< 0.02 U	0.13 J	0.8 J	1.61 J	3.214	< 0.083 U	< 0.68 U	0.02997	< 0.005 U	12.38	11.93	< 0.86 U
5/30/2018	Background	< 0.93 U	< 1.05 U	76.07	0.03 J	< 0.07 U	1.48	4.37 J	4.03	0.4361 J	< 0.68 U	0.03287	< 0.005 U	13.07	11.96	< 0.86 U
6/27/2018	Background	< 0.93 U	1.13 J	119	0.12 J	< 0.07 U	3.74	4.96 J	--	--	1.84 J	0.02781	< 0.005 U	24.56	10.11	< 0.86 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-14
Northeastern - LF
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/30/2018	Background	1.47	77.1	--	--	6.7	--	--
6/27/2018	Background	1.56	71	--	--	--	--	--
7/31/2018	Background	1.50	68.0	--	--	7.4	--	--
8/30/2018	Background	2.09	181	--	--	7.8	--	--
8/26/2019	Background	1.69	110	3,117	3.066	8.6	357	6,198
6/30/2020	Background	1.36	60.8	2,980	3.97	8.5	189	5,370
10/21/2020	Background	1.39	64.3	2,830	4.22	8.6	226	11,900

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-14
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
5/30/2018	Background	0.93 J	1.15 J	157	< 0.02 U	< 0.07 U	< 0.23 U	3.29 J	--	--	< 0.68 U	0.361	0.009 J	20.67	5.51	< 0.86 U
6/27/2018	Background	< 0.93 U	< 1.05 U	161	< 0.02 U	< 0.07 U	< 0.23 U	3.14 J	--	--	< 0.68 U	0.378	0.006 J	20.16	4.35 J	42
7/31/2018	Background	1.35	0.58	172	0.029	0.18	< 7 U	2.63	--	--	0.037	0.362	0.008 J	27.8	3.5	0.05 J
8/30/2018	Background	1.61	0.57	153	0.034	0.21	0.286	1.71	--	--	1.06	0.38	< 0.005 U	31.7	2.2	0.03 J

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-15
Northeastern - LF
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
1/25/2017	Background	9.45	87	19	2	8.0	530	1,112
3/13/2017	Background	8.23	104	28	2	--	551	1,110
4/27/2017	Background	9.44	73.1	78	1.83	7.6	558	1,128
5/18/2017	Background	10.2	52.2	111	2	--	596	1,092
6/16/2017	Background	9.74	126	24	1.96	7.9	559	1,060
6/28/2017	Background	9.75	79.2	22	1.8739	8.5	616	1,072
7/13/2017	Background	9.87	110	19	1.894	8.2	632	1,076
8/4/2017	Background	9.66	86.3	19	1.759	7.6	612	1,032
8/17/2017	Background	9.53	93.1	18	1.691	7.8	572	1,110
8/30/2017	Background	9.59	64.9	17	2.0289	6.7	590	1,038
9/13/2017	Background	9.13	68	17	1.671	8.6	584	1,080
9/20/2017	Background	9.65	67.6	15	0.642 J	7.5	543	1,036
10/11/2017	Detection	9.62	80.1	46	1.9468	7.6	593	1,124
1/22/2018	Detection	9.16	--	--	--	7.2	--	--
5/30/2018	Detection	8.76	105	33	2.331	7.7	549	1,128
10/15/2018	Detection	--	--	--	2.27	--	--	--
10/22/2018	Detection	8.90	250	46.81	2.17	7.8	549.46	1,082
11/28/2018	Detection	--	119	--	--	8.3	--	--
2/27/2019	Detection	8.34	96.9	24.3	1.45	8.6	574	1,046
8/26/2019	Detection	8.28	119	20	1.252	10.5	587	1,072
12/3/2019	Detection	--	--	--	--	7.7	--	--
6/30/2020	Detection	8.00	105	17.9	1.55	9.3	706	1,100
9/8/2020	Detection	--	--	--	--	8.9	730	--
10/21/2020	Detection	7.79	117	15.7	1.53	11.0	631	1,140
12/16/2020	Detection	--	--	--	--	7.8	--	--

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
Due to limited groundwater volume, pH values for several sampling events were collected the day prior to collection of analytical samples for other parameters.

Table 1 - Groundwater Data Summary: MW-15
Northeastern - LF
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
1/25/2017	Background	<5 U	<5 U	107	<1 U	<1 U	3.00	<5 U	0.505	2.0	<5 U	0.0120	<0.025 U	643	<5 U	<2 U
3/13/2017	Background	<5 U	<5 U	100	<1 U	<1 U	3.00	<5 U	1.241	2.0	<5 U	0.0100	<0.025 U	550	<5 U	<2 U
4/27/2017	Background	1.31 J	2.85 J	55.73	< 0.02 U	< 0.07 U	0.23 J	0.64 J	0.203	1.83	< 0.68 U	0.00786	< 0.005 U	614	1.83 J	1.05 J
5/18/2017	Background	1.38 J	13.61	52.06	< 0.02 U	0.26 J	0.96 J	0.62 J	1.097	2	1.7 J	0.00834	0.022 J	605	22.28	< 0.86 U
6/16/2017	Background	< 0.93 U	7.56	212	0.25 J	0.64 J	8.57	3.96 J	1.215	1.96	5.25	0.01148	0.02 J	662	12.46	< 0.86 U
6/28/2017	Background	< 0.93 U	4.4 J	98.67	0.02 J	< 0.07 U	1.79	1.29 J	1.652	1.8739	2.42 J	0.00722	0.022 J	644	5.76	< 0.86 U
7/13/2017	Background	1.63 J	3.77 J	150	0.12 J	0.09 J	4.03	2.64 J	0.287	1.894	2.87 J	0.0091	0.009 J	668	9	< 0.86 U
8/4/2017	Background	1.56 J	3.73 J	94.19	0.08 J	0.09 J	1.51	1.4 J	0.914	1.759	1.36 J	0.00752	0.021 J	647	6	< 0.86 U
8/17/2017	Background	0.99 J	4.44 J	133	0.09 J	< 0.07 U	3.3	1.69 J	0.649	1.691	1.44 J	0.00823	0.015 J	642	5.95	< 0.86 U
8/30/2017	Background	< 0.93 U	6.32	64.87	0.04 J	< 0.07 U	0.86 J	0.78 J	0.393	2.0289	< 0.68 U	0.00629	0.01 J	656	9.24	< 0.86 U
9/13/2017	Background	< 0.93 U	4.18 J	54.34	0.03 J	< 0.07 U	< 0.23 U	0.66 J	1.07	1.671	< 0.68 U	0.00635	0.008 J	638	1.45 J	< 0.86 U
9/20/2017	Background	< 0.93 U	3.87 J	49.23	< 0.02 U	< 0.07 U	0.23 J	0.77 J	0.887	0.642 J	< 0.68 U	0.00621	< 0.005 U	652	3.77 J	< 0.86 U

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
<: Non-detect value. Parameters which were not detected are shown as less than the reporting limit for the January and March 2017 events and less than the method detection limit (MDL) for all subsequent events followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
Due to limited groundwater volume, radium samples for several sampling events were collected the day prior to collection of analytical samples for other parameters.

APPENDIX II

Where applicable, show in this appendix the results from statistical analyses, and a description of the statistical analysis method chosen. These statistical analyses are to be conducted separately for each constituent in each monitoring well.

STATISTICAL ANALYSIS SUMMARY- Background Update Calculations Stations 3 and 4 Landfill – Northeastern Power Station Oologah, Oklahoma

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January 8, 2020

CHA8473

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LIST OF ACRONYMS AND ABBREVIATIONS

ANOVA	Analysis of Variance
CCR	Coal Combustion Residuals
CCV	Continuing Calibration Value
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
LF	Landfill
LFB	Laboratory Fortified Blanks
LPL	Lower Prediction Limit
LRB	Laboratory Reagent Blanks
NELAP	National Environmental Laboratory Accreditation Program
ODEQ	Oklahoma Department of Environmental Quality
PQL	Practical Quantitation Limit
QA	Quality Assurance
QC	Quality Control
SSI	Statistically Significant Increase
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit

SECTION 1

EXECUTIVE SUMMARY

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (OAC 252.517, "CCR rule"), groundwater monitoring has been conducted at Stations 3 and 4 Landfill, an existing CCR unit at the Northeastern Power Station located in Oologah, Oklahoma.

A minimum of eight monitoring events were completed prior to October 2017 to establish background concentrations for Appendix III and Appendix IV parameters under the CCR rule. AEP had initially established a background dataset for MW-3D, - 6D, -9D, and -15 in January 2018. At the request of Oklahoma Department of Environmental Quality (ODEQ), the Landfill's groundwater monitoring network was expanded in July 2019 to include additional deep wells surrounding the unit (MW-3D through MW-9D and MW-12D through MW-15) (Geosyntec, 2019). A minimum of four semiannual detection monitoring events were conducted between October 2017 and May 2019 for wells originally in the network. Data from these events, including both initial and verification results, were evaluated for inclusion in the background dataset. Groundwater data underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact the usability of the data.

The detection monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. The compliance data were reviewed for outliers, which were removed (when appropriate) prior to updating upper prediction limits (UPLs) for each Appendix III parameter to represent background values. Oversight on the use of statistical calculations was provided by Dr. Kirk Cameron of MacStat Consulting, Ltd.

SECTION 2

LANDFILL EVALUATION

2.1 Previous Background Calculations

A minimum of eight monitoring events were completed prior to October 2017 to establish background concentrations for Appendix III and Appendix IV parameters under the CCR rule for the initial monitoring well network. The data were reviewed for outliers and trends prior to calculating upper prediction limits (UPLs) for each Appendix III parameter. Lower prediction limits (LPLs) were also established for pH. Interwell tests were selected for boron and pH, whereas intrawell tests were selected for calcium, chloride, fluoride, sulfate, and total dissolved solids (TDS). The statistical analyses to establish background levels were previously documented in the January 2018 *Statistical Analysis Summary* report (Geosyntec, 2018a). Following submittal of an alternate source demonstration (ASD) in April 2018 (Geosyntec, 2018b), ODEQ noted that upgradient wells MW-7D and MW-8D are inappropriate for interwell statistics (ODEQ, 2019). Thus, these wells were removed from the network and intrawell statistics will be used until an appropriate background location can be identified.

At the request of ODEQ, the Landfill's groundwater monitoring network was expanded in July 2019 to include additional deep wells surrounding the unit (MW-3D through MW-9D and MW-12D through MW-15) (Geosyntec, 2019). Adequate data was collected for wells MW-4D, MW-5D, and MW-12D by July 2019 and the background dataset was updated to include those locations. Intrawell tests were selected for all parameters. The statistical analyses to establish background levels were previously documented in the July 2019 *Statistical Analysis Summary* report (Geosyntec, 2019).

2.2 Data Validation & QA/QC

Since October 2017, at least four independent sampling events have been conducted at the LF at wells originally in the network. The field sampling forms and laboratory analytical reports for these sampling events are provided in Attachment A and Attachment B, respectively. If the initial results for each detection monitoring event identified possible exceedances, verification sampling was completed on an individual well/parameter basis. Thus, a minimum of four samples were collected from each compliance well in the original network configuration. A summary of data collected during these detection monitoring events may be found in Table 1. Because less than four events were completed since background was established for the newer wells (MW-4D, -5D, and -12D), no data were evaluated for these locations at this time.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory

reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.23 statistics software. The export was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

2.3 Statistical Analysis

The detection monitoring data used to conduct the statistical analyses described below are summarized in Table 1. Statistical analyses for the Landfill were conducted in accordance with the January 2017 *Statistical Analysis Plan* (AEP, 2017), except where noted below. The complete statistical analysis results are included in Attachment C.

Time series plots of Appendix III parameters are included in Attachment C and were used to evaluate concentrations over time and to provide an initial screening of suspected outliers and trends. Box plots were also compiled to provide visual representation of variations between wells and within individual wells (Attachment C).

2.3.1 Outlier Evaluation

Potential outliers were evaluated using Tukey's outlier test; i.e., data points were considered potential outliers if they met one of the following criteria:

$$x_i < \tilde{x}_{0.25} - 3 \times IQR \quad (1)$$

or

$$x_i > \tilde{x}_{0.75} + 3 \times IQR \quad (2)$$

where:

$x_i =$ individual data point
$\tilde{x}_{0.25} =$ first quartile
$\tilde{x}_{0.75} =$ third quartile
$IQR =$ the interquartile range $= \tilde{x}_{0.75} - \tilde{x}_{0.25}$

Data that were evaluated as potential outliers are summarized in Attachment C. Next, the data were reviewed to identify possible sources of errors or discrepancies, including data recording errors, unusual sampling conditions, laboratory quality, or inconsistent sample turbidity. Seven values were removed from the dataset after review, including three values during the detection monitoring period. These include:

- The chloride concentration of 91 mg/L on May 30, 2018 at MW-12D;
- The sulfate concentration of 662 mg/L on July 31, 2018 at MW-5D; and
- The boron concentration of 1.56 mg/L on May 7, 2019 at MW-3D.

2.3.2 Establishment of Updated Background Levels

Analysis of variance (ANOVA) was conducted during the initial background screening to assist in identifying if intrawell tests are the most appropriate statistical approach for assessing Appendix III parameters. Intrawell tests compare compliance data from a single well to background data within the same well and are most appropriate when 1) upgradient wells exhibit spatial variation; 2) when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; or 3) when downgradient water quality is not impacted compared to upgradient water quality for the same parameter. Periodic updating of background statistical limits is necessary as natural systems continuously change due to physical changes to the environment. For intrawell analyses, data for all wells and constituents are re-evaluated when a minimum of four new data points are available. These four (or more) new data points are used to determine if earlier concentrations are representative of present-day groundwater quality.

Because four or more data points are not available for wells added to the network in July 2019 (MW-4D, -5D, and -12D), calculated prediction limits for these wells were not re-evaluated. However, the July 2018 sulfate value at MW-12D which was previously identified as an outlier was not identified as an outlier during this evaluation as it does not appear different than the dataset. Thus, the prediction limit for sulfate at MW-12D was recalculated with this value added to the dataset.

Mann-Whitney (Wilcoxon rank-sum) tests were used to compare the medians of historical data (January 2017 - September 2017) to the new compliance samples (October 2017 – May 2019). Results were evaluated to determine if the medians of the two groups were similar at the 99% confidence level. Where no significant difference was found, the new compliance data were added to the background dataset. Where a statistically significant difference was found between the medians of the two groups, the data were reviewed to evaluate the cause of the difference and to determine if adding newer data to the background dataset, replacing the background dataset with the newer data, or continuing to use the existing background dataset was most appropriate. If the differences appeared to have been caused by a release, then the previous background dataset would have continued to be used.

The complete Mann-Whitney test results and a summary of the significant findings can be found in Appendix C. Significant differences were found between the two groups for boron at downgradient monitoring well MW-3D. Typically, when the Mann-Whitney test finds significant differences between medians the background data is not updated to include the newer data. However, the concentrations reported for boron at downgradient monitoring well MW-3D were

lower than those reported in at least one upgradient well, and therefore the background data set was updated to include the newer data.

After the revised background set was established, a parametric or non-parametric analysis was selected based on the distribution of the data and the frequency of non-detect data. Estimated results less than the practical quantitation limit (PQL) – i.e., "J-flagged" data – were considered detections and the estimated results were used in the statistical analyses. Non-parametric analyses were selected for datasets with at least 50% non-detect data or datasets that could not be normalized. Parametric analyses were selected for datasets (either transformed or untransformed) that passed the Shapiro-Wilk / Shapiro-Francía test for normality. The Kaplan-Meier non-detect adjustment was applied to datasets with between 15% and 50% non-detect data. For datasets with fewer than 15% non-detect data, non-detect data were replaced with one half of the PQL. The selected analysis (i.e., parametric or non-parametric) and transformation (where applicable) for each background dataset are shown in Attachment C.

2.3.3 Updated Prediction Limits

Intrawell UPLs for all Appendix III parameters were updated using all the historical data through May 2019 to represent background values. Intrawell LPLs were also generated for pH. The updated prediction limits are summarized in Table 2.

The intrawell UPLs were calculated for a one-of-two retesting procedure; i.e., if at least one sample in a series of two does not exceed the UPL, then it can be concluded that an SSI has not occurred. In practice, where the initial result did not exceed the UPL, a second sample will not be collected. The retesting procedures allowed achieving an acceptably high statistical power to detect changes at downgradient wells for constituents evaluated using intrawell prediction limits.

2.4 Conclusions

For monitoring wells where four detection monitoring events were completed in accordance with the CCR Rule, the background datasets were statistically reassessed for potential inclusion of the new values. The laboratory and field data from these events were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. Mann-Whitney tests were completed to evaluate whether data from the detection monitoring events could be added to the existing background dataset. Where appropriate, the background datasets were updated, and UPLs and LPLs were recalculated. Intrawell tests using a one-of-two retesting procedure were selected and updated for all Appendix III parameters.

SECTION 3

REFERENCES

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Oklahoma Department of Environmental Quality (ODEQ). 2019. Response to Notice of Deficiency – Alternate Source Demonstration (ASD) – Coal Combustion Residuals (CCR) Landfill. Letter to Ms. Jill Parker-Witt. January 30.

United States Environmental Protection Agency (USEPA). 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. EPA 530/R-09-007. March.

TABLES

Table 1: Groundwater Data Summary
Northeastern - Landfill

Parameter	Unit	MW-3D							MW-6D							
		10/11/2017	5/2/2018	5/30/2018	10/22/2018	11/28/2018	2/27/2019	5/7/2019	10/11/2017	1/22/2018	5/2/2018	5/30/2018	10/22/2018	11/28/2018	2/27/2019	5/7/2019
		2017-D1	*	2018-D1-R1	2018-D2	2018-D2-R1	2019-D1	*	2017-D1	2017-D1-R1	*	2018-D1	2018-D2	2018-D2-R1	2019-D1	2019-D1-R1
Boron	mg/L	0.878	1.08	0.952	1.02	0.964	0.973	1.56	3.74	4.24	3.52	3.35	4.34	-	3.63	-
Calcium	mg/L	134	127	129	142	-	127	-	165	-	173	269	237	-	360	185
Chloride	mg/L	13.0	13.0	13.0	14.9	-	13.2	-	29.0	-	31.0	32.0	31.7	-	26.9	-
Fluoride	mg/L	1.00 U	0.757 J	0.896 J	1.09	0.648 J	0.710	-	0.960 J	0.76	0.806 J	0.922 J	1.28	0.844 J	0.890	-
Total Dissolved Solids	mg/L	722	736	724	702	-	700	-	1030	-	1060	1090	1150	-	1140	1040
Sulfate	mg/L	218	196	214	211	-	223	-	545	494	406	401	472	-	496	-
pH	SU	6.9	7.3	7.5	7.2	8.0	7.8	-	6.9	6.9	7.3	7.4	7.3	7.7	7.6	-

Parameter	Unit	MW-9D					MW-15						
		10/4/2017	10/11/2017	1/22/2018	10/22/2018	2/27/2019	10/11/2017	1/22/2018	5/30/2018	10/15/2018	10/22/2018	11/28/2018	2/27/2019
		*	2017-D1	2017-D1-R1	2018-D2	2019-D1	2017-D1	2017-D1-R1	2018-D1	2018-D1-R1	2018-D2	2018-D2-R1	2019-D1
Boron	mg/L	6.68	7.07	7.43	7.19	6.49	9.62	9.16	8.76	-	8.90	-	8.34
Calcium	mg/L	304	288	-	199	155	80.1	-	105	-	250	119	96.9
Chloride	mg/L	180	314	-	106	28.9	46.0	-	33.0	-	46.8	-	24.3
Fluoride	mg/L	1.00 U	1.52	-	0.600 J	0.890	1.95	-	2.33	2.27	2.17	-	1.45
Total Dissolved Solids	mg/L	2300	2190	-	1260	1170	1120	-	1130	-	1080	-	1050
Sulfate	mg/L	1080	1080	-	519	555	593	-	549	-	549	-	574
pH	SU	7.3	7.1	7.1	7.1	7.6	7.6	7.2	7.7	-	7.8	8.3	8.6

Notes:
mg/L: milligrams per liter
SU: standard unit
U: Parameter was not present in concentrations above the method detection limit and is reported as the reporting limit
J: Estimated value. Parameter was detected in concentrations below the reporting limit
--: Not Measured
D1: First semi-annual detection monitoring event of the year
D2: Second semi-annual detection monitoring event of the year
R1: First verification event associated with detection monitoring round
R2: Second verification event associated with detection monitoring round
*Samples denoted with asterisks are not associated with any semiannual detection monitoring events but were included in the background update.

Table 2: Background Level Summary
Northeastern Plant - Landfill

Geosyntec Consultants, Inc.

Parameter	Units	Description	MW-3D	MW-4D*	MW-5D*	MW-6D	MW-9D	MW-12D*	MW-15
Boron	mg/L	Intrawell Background Value (UPL)	1.07	1.52	0.647	4.73	8.00	10.3	10.6
Calcium	mg/L	Intrawell Background Value (UPL)	181	221	172	342	456	198	196
Chloride	mg/L	Intrawell Background Value (UPL)	16.0	46.2	35.3	34.1	403	25.6	104
Fluoride	mg/L	Intrawell Background Value (UPL)	1.09	1.00	1.24	1.24	2.18	3.40	2.49
pH	SU	Intrawell Background Value (UPL)	8.2	8.6	8.8	8.1	7.7	10.2	9.0
		Intrawell Background Value (LPL)	6.3	6.7	6.9	6.3	6.8	6.7	6.7
Sulfate	mg/L	Intrawell Background Value (UPL)	248	428	160	585	1640	720	642
TDS	mg/L	Intrawell Background Value (UPL)	832	1040	686	1180	3480	1160	1160

Notes
UPL: Upper prediction limit
LPL: Lower prediction limit
TDS: Total dissolved solids
*Prediction limits for MW-4D, MW-5D and MW-12D were not updated, as four independent events have not been completed since they were established in July 2019.

ATTACHMENT A
Field Sampling Forms

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: _____. **DATE:** 10/04/17.

Well Identification Number	MW-7D	MW-8D	MW-9D	MW-10D	MW-11D	MW-12D
Sample Identification	SAMPLE	SAMPLE	SAMPLE			
Elevation of Top of Casing (ft. NGVD)	626.45	629.32				
Depth to Water (ft)	57.04	61.98	61.64	68.94	49.92	18.06
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	64.50	~~64.02~~ 63.16	71.20	50.17	44.80
Height of Water Column (ft.)	1.66		1.52			
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.27		0.24			
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)	7.16		7.26			
Temperature (°C)	21.42		20.89			
Conductivity (µmhos/cc)	2850		1700			
Turbidity (NTU)	638		316			
Dissolved Oxygen (mg/L)	4.21		1.87			
ORP (mV)	180		162			
Purge Time - Begin						
Purge Time - End						
Sample Time	WG METALS 1 MA		WG METALS			
Sample Date						

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: _____. **DATE:** 10/11/17.

Well Identification Number	MW-1D	MW-2D	MW-3D	MW-4D	MW-5D	MW-6D
Sample Identification			SAMPLE			SAMPLE
Elevation of Top of Casing (ft. NGVD)	638.07	638.19	630.65	625.00	636.84	636.8
Depth to Water (ft)	55.24	57.89	37.42	43.26	27.37	33.58
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	61.80	62.95	53.95	58.42	58.51
Height of Water Column (ft.)			25.53			24.93
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)			4.16			4.06
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)			6.92			6.91
Temperature (°C)			16.61			16.21
Conductivity (µmhos/cc)			1020			1400
Turbidity (NTU)			106			122
Dissolved Oxygen (mg/L)			2.45			2.82
ORP (mV)			138			147
Purge Time - Begin						
Purge Time - End						
Sample Time						
Sample Date						

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: _____. **DATE:** 10/11/17.

Well Identification Number	MW-7D	MW-8D	MW-9D	MW-10D	MW-11D	MW-12D
Sample Identification	SAMPLE	SAMPLE	SAMPLE			
Elevation of Top of Casing (ft. NGVD)	626.45	629.32				
Depth to Water (ft)	57.38	61.51	61.89	69.04	47.86	18.56
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	64.50	~~64.02~~ 63.16	71.20	50.17	44.80
Height of Water Column (ft.)	1.32	2.99	1.27			
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.22	0.49	0.21			
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)	7.48	6.90	7.09			
Temperature (°C)	18.09	17.10	17.52			
Conductivity (µmhos/cc)	2410	32100	1820			
Turbidity (NTU)	728	263	468			
Dissolved Oxygen (mg/L)	4.17	2.74	3.14			
ORP (mV)	144	228	137			
Purge Time - Begin						
Purge Time - End						
Sample Time						
Sample Date						

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: _____. **DATE:** 10/11/17.

Well Identification Number	MW-13D	MW-14	MW-15	MW-16	MW-17	SP-1
Sample Identification			SAMPLE			SAMPLE
Elevation of Top of Casing (ft. NGVD)						621.26
Depth to Water (ft)	41.32	75.94	59.45	61.62	56.42	16.53
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.39	78.96	74.21	64.15	58.41	37.99
Height of Water Column (ft.)			14.76			21.46
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)			2.41			3.50
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)			7.64			7.36
Temperature (°C)			17.57			18.90
Conductivity (µmhos/cc)			1880			939
Turbidity (NTU)			163			88.2
Dissolved Oxygen (mg/L)			2.03			5.09
ORP (mV)			155			136
Purge Time - Begin						
Purge Time - End						
Sample Time						
Sample Date						

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenneth McDonald. **DATE:** 01/22/18.

Well Identification Number	MW-1D	MW-2D	MW-3D	MW-4D	MW-5D	MW-6D
Sample Identification			SAMPLE			SAMPLE
Elevation of Top of Casing (ft. NGVD)	638.07	638.19	630.65	625.00	636.84	636.8
Depth to Water (ft)						33.97
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	61.80	62.95	53.95	58.42	58.51
Height of Water Column (ft.)						
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)						
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)						6.85
Temperature (°C)						17.24
Conductivity (µmhos/cc)						1910
Turbidity (NTU)						108
Dissolved Oxygen (mg/L)						3.61
ORP (mV)						137
Purge Time - Begin						
Purge Time - End						
Sample Time						SO4/F/B
Sample Date						

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenneth McDonald. **DATE:** 01/22/18.

Well Identification Number	MW-7D	MW-8D	MW-9D	MW-10D	MW-11D	MW-12D
Sample Identification	SAMPLE	SAMPLE	SAMPLE			
Elevation of Top of Casing (ft. NGVD)	626.45	629.32				
Depth to Water (ft)			59.72			
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	64.50	64.02	71.20	50.17	44.80
Height of Water Column (ft.)						
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)						
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)			7.14			
Temperature (°C)			18.23			
Conductivity (µmhos/cc)			1720			
Turbidity (NTU)			306			
Dissolved Oxygen (mg/L)			1.84			
ORP (mV)			157			
Purge Time - Begin						
Purge Time - End						
Sample Time			B/RA			
Sample Date			2RA			

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenneth McDonald. **DATE:** 01/22/18.

Well Identification Number	MW-13D	MW-14	MW-15	MW-16	MW-17	SP-1
Sample Identification			SAMPLE			SAMPLE
Elevation of Top of Casing (ft. NGVD)						621.26
Depth to Water (ft)			61.71			16.70
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.39	78.96	74.21	64.15	58.41	37.99
Height of Water Column (ft.)						
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)						
Water Removed From Well (gallons)						
Method of Removal						
Was Well Purged Dry?						
pH (standard units)			7.24			6.90
Temperature (°C)			17.91			18.09
Conductivity (µmhos/cc)			1850			849
Turbidity (NTU)			208			54.2
Dissolved Oxygen (mg/L)			5.31			3.14
ORP (mV)			136			131
Purge Time - Begin						
Purge Time - End						
Sample Time			B			Ca
Sample Date						

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 05/01-02/18

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Sample Identification	CCR III & IV	Gauge	CCR III & IV	Metals IV	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	638.07	638.89	638.19	637.37	630.65	630.19
Depth to Water (ft)	54.04	22.41	55.13	32.22	37.07	21.31
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)	4.21	15.35	6.67	4.53	25.88	5.90
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.68	2.50	1.08	0.74	4.22	0.96
Water Removed From Well (gallons)	0.50	—	3.25	1.0	13.0	1.25
Method of Removal	BAILER	—	PUMP	PUMP	PUMP	PUMP
Was Well Purged Dry?	YES	—	NO	YES	NO	YES
pH (standard units)		—	10.60	9.16	7.27	7.36
Temperature (°C)		—	20.32	19.98	20.30	20.25
Conductivity (µmhos/cc)		—	1770	2250	1020	2260
Turbidity (NTU)		—	183	285	78.3	108
Appearance		—	SLIGHTLY TURBID	TURBID	CLEAR	SLIGHTLY TURBID
Odor		—	NONE	NONE	NONE	SLIGHT SULPHUR
Purge Time - Begin	DTW 57.04 05/1 @ 1455	—				
Purge Time - End	DTW 56.18 @ 1300 05/02	—				
Sample Time	0.33 GAL INSUFFICIENT	—	1035	1045	940	0955
Sample Date	WATER	—	05/02/18	05/02/18	05/02/18	05/02/18
					DUP	DUP-111

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 05/01-02/18.

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Sample Identification	CCR III & IV	Gauge	CCR III & IV	Metals IV	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	625.00	624.54	636.84	636.72	636.80	636.66
Depth to Water (ft)	43.15	Dry	22.20	20.91	33.95	Dry
Water Level Elevation (ft. NGVD)		—				—
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	10.71	—	36.22	12.24	24.56	—
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.75	—	5.90	2.00	4.00	—
Water Removed From Well (gallons)	6.0	—	11.25	6.0	10.50	—
Method of Removal	Pump	—	Pump	Pump	Pump	—
Was Well Purged Dry?	No	—	Yes	No	Yes	—
pH (standard units)	7.14	—	7.32	7.03	7.28	—
Temperature (°C)	20.66	—	19.22	19.27	20.40	—
Conductivity (µmhos/cc)	1240	—	931	1240	1370	—
Turbidity (NTU)	136	—	94.6	117	206	—
Appearance	SLIGHTLY TURBID	—	CLEAR	CLEAR	SLIGHTLY TURBID	—
Odor	NONE	—	NONE	SLIGHT SULPHUR	NONE	—
Purge Time - Begin		—				—
Purge Time - End		—				—
Sample Time	920	—	1105	1055	1010	—
Sample Date	05/02/18	—	05/02/18	05/02/18	05/02/18	—

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 05/01-02/18.

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Sample Identification	Gauge	Gauge	Gauge	Gauge	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	626.45	626.46	629.32	628.71	637.04	636.94
Depth to Water (ft)	13.93	11.46	22.36	7.51	57.03	26.47
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10 ~~64.02~~	36.71
Height of Water Column (ft.)	44.77	22.08	42.14	35.79	6.07	10.24
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	7.30	3.60	6.87	5.83	0.99	1.67
Water Removed From Well (gallons)	—	—	—	—	0.75	2.0
Method of Removal	—	—	—	—	Pump	Pump
Was Well Purged Dry?	—	—	—	—	Yes	Yes
pH (standard units)	—	—	—	—		11.83
Temperature (°C)	—	—	—	—		20.45
Conductivity (µmhos/cc)	—	—	—	—		3690
Turbidity (NTU)	—	—	—	—		289
Appearance	—	—	—	—		TINTED BROWN
Odor	—	—	—	—		NONE
Purge Time - Begin	—	—	—	—	DTW 62.36 05/01 @ 1530	
Purge Time - End	—	—	—	—	DTW 61.94 05/02 @ 1305	
Sample Time	—	—	—	—	0.190 GAL INSUFFICIENT WATER	1025
Sample Date	—	—	—	—		05/02/18

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 05/01-02/18.

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	Metals IV	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	639.32	639.58	628.27	628.75	623.67	623.50
Depth to Water (ft)	68.32	22.77	47.68	12.51	15.62	11.78
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33 ~~71.20~~	36.22	50.34 ~~50.17~~	31.02	44.92 ~~44.80~~	22.94 ~~22.76~~
Height of Water Column (ft.)	3.01	13.45	2.66	18.51	29.30	11.16
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.49	2.19	0.43	3.02	4.78	1.82
Water Removed From Well (gallons)	0.25	7.0	0.25	10.0	11.0	6.0
Method of Removal	BAILER	PUMP	BAILER	PUMP	PUMP	PUMP
Was Well Purged Dry?	YES	NO	YES	NO	YES	NO
pH (standard units)		8.17		7.87	7.39	7.17
Temperature (°C)		19.68		19.06	18.00	18.20
Conductivity (µmhos/cc)		904		799	1330	948
Turbidity (NTU)		53.2		41.6	422	108
Appearance		CLEAR		CLEAR	TURBID	CLEAR
Odor		NONE		NONE	NONE	NONE
Purge Time - Begin	DTW 70.01 05/01@1600		DTW 48.67 05/01@1610			
Purge Time - End	DTW 69.88 05/02@1210		DTW 48.62 05/02@1200			
Sample Time	0.230AL INSUFFICIENT	1205	0.280AL INSUFFICIENT	1155	1140	1145
Sample Date	WATER	05/02/18	WATER	05/02/18	05/02/18	05/02/18

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 05/01-02/18.

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	Gauge	CCR III & IV	CCR III & IV
Elevation of Top of Casing (ft. NGVD)	619.06	619.15	640.89	637.71	637.26	636.52
Depth to Water (ft)	34.78	15.66	72.21	55.85	61.29	52.11
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	~~47.39~~ 47.56	~~18.05~~ 18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)	12.78	~~18.13~~ 2.46	6.75	18.36	2.86	6.30
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	2.08	0.40	1.10	2.99	0.47	1.03
Water Removed From Well (gallons)	6.50	0.25	0.75	—	0.25	0.50
Method of Removal	Pump	Bailer	Pump	—	Pump	Pump
Was Well Purged Dry?	No	Yes	Yes	—	Yes	Yes
pH (standard units)	7.08	7.19		—		
Temperature (°C)	19.06	17.25		—		
Conductivity (µmhos/cc)	13.80	908		—		
Turbidity (NTU)	101	124		—		
Appearance	Clear	Clear		—		
Odor	None	None		—		
Purge Time - Begin			DTW 72.31 05/01@ 1440	—	DTW 63.01 05/01@ 1540	DTW 56.67 05/01@ 1550
Purge Time - End			DTW 76.82 05/02@ 1310	—	DTW 62.21 05/02@ 1315	DTW 56.03 05/01@ 1320
Sample Time	1130	1125	0.35 GAL INSUFFICIENT	—	0.32 GAL INSUFFICIENT	0.39 GAL INSUFFICIENT
Sample Date	05/02/18	05/02/18	WATER	—	WATER	WATER

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 05/29-30/18.

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Sample Identification	CCR III & IV	NA	CCR III & IV	Metals IV	CCR III & IV (No Radium)	Metals IV
Elevation of Top of Casing (ft. NGVD)	638.07	638.89	638.19	637.37	630.65	630.19
Depth to Water (ft)	53.76		58.41	34.23	37.11	21.89
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)	4.49		3.39	2.52	25.84	5.32
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.73		0.55	0.41	4.21	0.87
Water Removed From Well (gallons)	0.50		1.25	0.50	13.0	1.0
Method of Removal	Bailer		Pump	Pump	Pump	Pump
Was Well Purged Dry?	Yes		Yes	Yes	No	Yes
pH (standard units)	7.38		10.43	7.81	7.46	6.97
Temperature (°C)	22.92		21.86	20.94	22.34	22.88
Conductivity (µmhos/cc)	4060		1840	1320	1120	2260
Turbidity (NTU)	21.8		122	127	64.8	21.4
Appearance	Clear		Slightly Turbid	Turbid	Clear	Clear
Odor	None		None	None	None	None
Purge Time - Begin						
Purge Time - End						
Sample Time	1312		1342	1039	1422	1111
Sample Date	05/30/18		05/30/18	05/30/18	05/30/18	05/30/18

Duplicate Shallow

Metals only

	Metals only
For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 05/29-30/18

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Sample Identification	CCR III & IV	NA	CCR III & IV	Metals IV	CCR III & IV (No Radium)	Metals IV
Elevation of Top of Casing (ft. NGVD)	625.00	624.54	636.84	636.72	636.80	636.66
Depth to Water (ft)	43.54		29.73	22.61	33.66	DRY
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	10.32		28.69	10.54	24.85	—
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.68		4.68	1.72	4.05	—
Water Removed From Well (gallons)	5.5		9.75	6.0	9.75	—
Method of Removal	Pump		Pump	Pump	Pump	—
Was Well Purged Dry?	No		Yes	No	Yes	—
pH (standard units)	7.00		7.23	6.78	7.39	—
Temperature (°C)	22.71		22.16	20.90	22.41	—
Conductivity (µmhos/cc)	1150		1520	1430	1290	—
Turbidity (NTU)	60.2		125	72.3	128	—
Appearance	CLEAR		SLIGHTLY TURBID	CLEAR BROWN TINT	TURBID	—
Odor	NONE		NONE	SLIGHT SULPHUR	NONE	—
Purge Time - Begin						—
Purge Time - End						—
Sample Time	1437		1326	1022	1409	—
Sample Date	05/30/18		05/30/18	05/30/18	05/30/18	—

LANDFILL DUP

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 05/29-30/18.

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Sample Identification	CCR III & IV (No Radium)	NA	CCR III & IV (No Radium)	NA	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	626.45	626.46	629.32	628.71	637.04	636.94
Depth to Water (ft)	13.12		21.71		56.66	26.75
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10	36.71
Height of Water Column (ft.)	45.58		42.79		6.44	9.96
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	7.43		6.97		1.05	1.62
Water Removed From Well (gallons)	18.25		16.0		0.75	1.75
Method of Removal	Pump		Pump		Pump	Pump
Was Well Purged Dry?	YES		YES		YES	YES
pH (standard units)	7.05		6.95		—	11.25
Temperature (°C)	22.25		21.72		—	22.91
Conductivity (µmhos/cc)	6230		29700		—	3280
Turbidity (NTU)	21.8		17.0		—	88.3
Appearance	CLEAR		CLEAR		—	BROWN TINT
Odor	NONE		NONE		—	NONE
Purge Time - Begin						
Purge Time - End						
Sample Time	1451		1512		INSUFFICIENT WATER	1053
Sample Date	05/30/18		05/30/18			05/30/18

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 05/29-30/18

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	Metals IV	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	639.32	639.58	628.27	628.75	623.67	623.50
Depth to Water (ft)	68.15	24.29	47.57	14.37	18.75	13.38
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33	36.22	50.34	31.02	44.92	22.94
Height of Water Column (ft.)	3.18	11.93	2.77	16.65	26.17	9.56
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.52	1.94	0.45	2.71	4.27	1.56
Water Removed From Well (gallons)	0.25	6.0	0.25	9.5	9.75	5.0
Method of Removal	BAILER	PUMP	BAILER	PUMP	PUMP	PUMP
Was Well Purged Dry?	YES	NO	YES	NO	YES	NO
pH (standard units)	7.46	7.26	7.34	7.32	7.68	6.77
Temperature (°C)	19.69	19.02	19.46	18.61	18.20	18.17
Conductivity (µmhos/cc)	9560	1390	1450	832	1330	899
Turbidity (NTU)	44.6	128	62.5	36.2	158	81.4
Appearance	CLEAR	SLIGHTLY TURBID	CLEAR	CLEAR	SLIGHTLY TURBID	CLEAR
Odor	NONE	NONE	NONE	NONE	NONE	NONE
Purge Time - Begin						
Purge Time - End						
Sample Time	1137	1131	1200	1158	1223	1217
Sample Date	05/30/18	05/30/18	05/30/18	05/30/18	05/30/18	05/30/18

METALS ONLY

	METALS ONLY
For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 05/29-30/18

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	CCR III & IV (No Radium)	CCR III & IV	CCR III & IV
Elevation of Top of Casing (ft. NGVD)	619.06	619.15	640.89	637.71	637.26	636.52
Depth to Water (ft)	40.69	16.60	71.65	60.04	61.18	51.54
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.56	18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)	6.87	1.52	7.31	14.17	2.97	6.87
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.12	0.25	1.19	2.31	0.48	1.12
Water Removed From Well (gallons)	4.0	0.1	0.75	4.5	0.25	1.5
Method of Removal	Pump	Bailer	Pump	Pump	Pump	Pump
Was Well Purged Dry?	No	Yes	Yes	Yes	Yes	Yes
pH (standard units)	6.89	—	6.72	7.71	—	7.98
Temperature (°C)	20.61	—	25.27	23.64	—	22.64
Conductivity (µmhos/cc)	1370	—	9080	1620	—	1560
Turbidity (NTU)	283	—	59.1	152	—	22.3
Appearance	Turbid	—	Clear	Turbid	—	Clear
Odor	None	—	None	None	—	None
Purge Time - Begin						
Purge Time - End						
Sample Time	1242	Insufficient	1258	1357	Insufficient Water	
Sample Date	05/30/18	Water	05/30/18	05/30/18		

Metals only

For 2" well multiply by	0.163
For 4" well multiply by	0.653

Metals only

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 10/22/18

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Sample Identification	NA	NA	NA	NA	Appendix III	NA
Elevation of Top of Casing (ft. NGVD)	638.07	638.89	638.19	637.37	630.65	630.19
Depth to Water (ft)					37.09	
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)					25.86	
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)					4.22	
Water Removed From Well (gallons)					13.0	
Method of Removal					Pump	
Was Well Purged Dry?					NO	
pH (standard units)					7.20	
Temperature (°C)					21.82	
Conductivity (µmhos/cc)					890	
Turbidity (NTU)					52.6	
Appearance					Clear	
Odor					None	
Purge Time - Begin					—	
Purge Time - End					—	
Sample Time					0840	
Sample Date					10/22/18	

For 2" well multiply by	0.163
For 4" well multiply by	0.653

Dup
Landfill

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 10/22/18

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Sample Identification	Resample	NA	Resample	NA	Appendix III	NA
Elevation of Top of Casing (ft. NGVD)	625.00	624.54	636.84	636.72	636.80	636.66
Depth to Water (ft)	43.41		41.92		34.34	
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	10.45		16.50		24.17	
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.70		2.69		3.94	
Water Removed From Well (gallons)	10.0		6.0		8.25	
Method of Removal	Pump		Pump		Pump	
Was Well Purged Dry?	No		Yes		Yes	
pH (standard units)	7.91		7.98		7.25	
Temperature (°C)	21.24		20.94		20.42	
Conductivity (µmhos/cc)	1150		982		1310	
Turbidity (NTU)	42.8		31.6		206	
Appearance	Clear		Clear		Turbid	
Odor	None		None		None	
Purge Time - Begin	—		—		—	
Purge Time - End	—		—		—	
Sample Time	0840		1000		0900	
Sample Date	10/22/18		10/22/18		10/22/18	
	Dup					

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 10/22/18

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Sample Identification	Appendix III	NA	Appendix III	NA	Appendix III	NA
Elevation of Top of Casing (ft. NGVD)	626.45	626.46	629.32	628.71	637.04	636.94
Depth to Water (ft)	13.08		32.72		56.60	
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10	36.71
Height of Water Column (ft.)	45.62		31.78		6.50	
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	7.44		5.18		1.06	
Water Removed From Well (gallons)	19.0		10.5		1.0	
Method of Removal	Pump		Pump		Pump	
Was Well Purged Dry?	YES		YES		YES	
pH (standard units)	7.42		7.12		7.13	
Temperature (°C)	22.39		22.59		20.97	
Conductivity (µmhos/cc)	5820		28400		1820	
Turbidity (NTU)	52.3		28.3		428	
Appearance	CLEAR		CLEAR		TURBID	
Odor	NONE		NONE		NONE	
Purge Time - Begin	—		—		—	
Purge Time - End	—		—		—	
Sample Time	1100		1040		0920	
Sample Date	10/22/18		10/22/18		10/22/18	

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald . **DATE:** 10/22/18 .

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Sample Identification	NA	NA	NA	NA	Resample	NA
Elevation of Top of Casing (ft. NGVD)	639.32	639.58	628.27	628.75	623.67	623.50
Depth to Water (ft)					19.85	
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33	36.22	50.34	31.02	44.92	22.94
Height of Water Column (ft.)					25.07	
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)					4.09	
Water Removed From Well (gallons)					9.5	
Method of Removal					Pump	
Was Well Purged Dry?					Yes	
pH (standard units)					8.97	
Temperature (°C)					21.37	
Conductivity (µmhos/cc)					1380	
Turbidity (NTU)					187	
Appearance					Turbid	
Odor					None	
Purge Time - Begin					—	
Purge Time - End					—	
Sample Time					1020	
Sample Date					10/22/18	

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 10/22/18.

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Sample Identification	NA	NA	NA	Appendix III	NA	NA
Elevation of Top of Casing (ft. NGVD)	619.06	619.15	640.89	637.71	637.26	636.52
Depth to Water (ft)				60.80		
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.56	18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)				13.41		
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)				2.19		
Water Removed From Well (gallons)				4.25		
Method of Removal				Pump		
Was Well Purged Dry?				Yes		
pH (standard units)				7.79		
Temperature (°C)				22.08		
Conductivity (µmhos/cc)				1420		
Turbidity (NTU)				188		
Appearance				TURBID		
Odor				NONE		
Purge Time - Begin				—		
Purge Time - End				—		
Sample Time				0940		
Sample Date				10/22/18		

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 11/28/18

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Sample Identification	CCR III & IV	Gauge	CCR III & IV	Metals IV	B NA F	Metals IV
Elevation of Top of Casing (ft. NGVD)	638.07	638.89	638.19	637.37	630.65	630.19
Depth to Water (ft)	54.27	24.67	60.19	35.31	36.85	24.55
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)	3.98	13.09	1.61	1.44	26.10	2.66
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.65	2.13	0.26	0.23	4.25	0.43
Water Removed From Well (gallons)	0.5	—	—	0.1	13.0	0.25
Method of Removal	Bailer	—	—	Bailer	Pump	Bailer
Was Well Purged Dry?	Yes	—	—	Yes	No	Yes
pH (standard units)	—	—	—	—	8.01	—
Temperature (°C)	—	—	—	—	21.38	—
Conductivity (µmhos/cc)	—	—	—	—	1200	—
Turbidity (NTU)	—	—	—	—	48.3	—
Appearance	—	—	—	—	clear	—
Odor	—	—	—	—	none	—
Purge Time - Begin	—	—	—	—	—	—
Purge Time - End	—	—	—	—	—	—
Sample Time	No	—	No	No	0930	No
Sample Date	Sample	—	Sample	Sample	11/28/18	Sample

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 11/28/18.

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	Metals IV	F NA	Metals IV
Elevation of Top of Casing (ft. NGVD)	625.00	624.54	636.84	636.72	636.80	636.66
Depth to Water (ft)	43.19	Dry	28.84	23.79	33.94	Dry
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	10.67	—	29.58	9.36	24.57	—
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.74	—	4.82	1.53	4.00	—
Water Removed From Well (gallons)	10.0	—	10.0	8.0	8.25	—
Method of Removal	Pump	—	Pump	Pump	Pump	—
Was Well Purged Dry?	NO	—	YES	NO	YES	—
pH (standard units)	7.89	—	8.06	8.13	7.71	—
Temperature (°C)	17.21	—	20.71	18.24	20.94	—
Conductivity (µmhos/cc)	1150	—	1010	1220	1330	—
Turbidity (NTU)	26.8	—	52.6	18.4	114	—
Appearance	CLEAR	—	CLEAR	CLEAR	SLIGHTLY TURBID	—
Odor	NONE	—	NONE	NONE	NONE	—
Purge Time - Begin	—	—	—	—	—	—
Purge Time - End	—	—	—	—	—	—
Sample Time	0850	—	1135	1125	0950	—
Sample Date	11/28/18	—	11/28/18	11/28/18	11/28/18	—

Dup

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 11/28/18.

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Sample Identification	NA	GAUGE	NA	GAUGE	NA	Metals IV
Elevation of Top of Casing (ft. NGVD)	626.45	626.46	629.32	628.71	637.04	636.94
Depth to Water (ft)	—	11.81	—	8.48	—	28.30
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10	36.71
Height of Water Column (ft.)	—	21.73	—	34.82	—	8.41
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	—	3.54	—	5.68	—	1.37
Water Removed From Well (gallons)	—	—	—	—	—	2.0
Method of Removal	—	—	—	—	—	Pump
Was Well Purged Dry?	—	—	—	—	—	YES
pH (standard units)	—	—	—	—	—	11.31
Temperature (°C)	—	—	—	—	—	18.04
Conductivity (µmhos/cc)	—	—	—	—	—	3360
Turbidity (NTU)	—	—	—	—	—	127
Appearance	—	—	—	—	—	BROWN TINT
Odor	—	—	—	—	—	—
Purge Time - Begin	—	—	—	—	—	—
Purge Time - End	—	—	—	—	—	—
Sample Time	—	—	—	—	—	1020
Sample Date	—	—	—	—	—	11/28/18

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kimmy McDonnell. **DATE:** 11/28/18.

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	Metals IV	CCR III & IV	Metals IV
Elevation of Top of Casing (ft. NGVD)	639.32	639.58	628.27	628.75	623.67	623.50
Depth to Water (ft)	68.91	26.18	48.28	15.42	19.73	20.68
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33	36.22	50.34	31.02	44.92	22.94
Height of Water Column (ft.)	2.42	10.04	2.06	15.60	25.19	2.26
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.39	1.64	0.34	2.54	4.11	0.34
Water Removed From Well (gallons)	0.25	8.0	0.25	10.0	9.0	0.25
Method of Removal	BAILER	PUMP	BAILER	PUMP	PUMP	PUMP
Was Well Purged Dry?	YES	NO	YES	NO	YES	YES
pH (standard units)	—	8.92	—	8.61	8.94	7.25
Temperature (°C)	—	19.07	—	26.00	21.62	19.28
Conductivity (µmhos/cc)	—	756	—	906	1290	920
Turbidity (NTU)	—	21.4	—	17.6	216	64.3
Appearance	—	CLEAR	—	CLEAR	TURBID	CLEAR
Odor	—	NONE	—	NONE	NONE	NONE
Purge Time - Begin	—	—	—	—	—	—
Purge Time - End	—	—	—	—	—	—
Sample Time	NO	1440	NO	1425	1325	1340
Sample Date	SAMPLE	11/28/18	SAMPLE	11/28/18	11/28/18	11/28/18

For 2" well multiply by	0.163
For 4" well multiply by	0.653

SHALLOW DUP

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 11/28/18.

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Sample Identification	CCR III & IV	Metals IV	CCR III & IV	Ca NA	CCR III & IV	CCR III & IV
Elevation of Top of Casing (ft. NGVD)	619.06	619.15	640.89	637.71	637.26	636.52
Depth to Water (ft)	45.35	17.65	76.19	61.62	62.36	55.23
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.56	18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)	2.21	0.47	2.77	12.59	1.79	3.18
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.36	0.08	0.45	2.05	0.29	0.52
Water Removed From Well (gallons)	0.25	—	0.25	4.0	—	0.25
Method of Removal	BAILER	—	BAILER	PUMP	—	BAILER
Was Well Purged Dry?	YES	—	YES	YES	—	YES
pH (standard units)	—	—	—	8.26	—	—
Temperature (°C)	—	—	—	21.49	—	—
Conductivity (µmhos/cc)	—	—	—	1380	—	—
Turbidity (NTU)	—	—	—	182	—	—
Appearance	—	—	—	SLIGHTLY TURBID	—	—
Odor	—	—	—	NONE	—	—
Purge Time - Begin	—	—	—	—	—	—
Purge Time - End	—	—	—	—	—	—
Sample Time	NO	NO	NO	1100	NO	NO
Sample Date	SAMPLE	SAMPLE	SAMPLE	11/28/18	SAMPLE	SAMPLE

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald . **DATE:** 02/27/19 .

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Sample	Appendix III	NA	Appendix III	Appendix IV	Appendix III	Appendix IV
Depth to Water (ft)	53.80	21.94	56.68	32.86	36.98	21.29
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)	4.45		5.12	3.89	25.97	5.92
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.73		0.83	0.63	4.23	0.96
Water Removed From Well (gallons)	0.5		3.0	1.25	13.0	1.0
Method of Removal	Bailer		Pump	Pump	Pump	Pump
Was Well Purged Dry?	Yes		No	Yes	No	Yes
pH (standard units)	—		11.03	8.90	7.80	7.38
Temperature (°C)	—		17.91	18.24	18.04	17.42
Conductivity (µmhos/cc)	—		1570	2920	934	2780
Turbidity (NTU)	—		134	116	38.9	134
Appearance	—		Slightly Turbid	Slightly Turbid	Clear	Slightly Turbid
Odor	—		None	None	None	None
Ohio Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	—	250 mL Unpres 250mL HNO3	—
Shreveport Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	500 mL HNO3	250 mL Unpres 250mL HNO3	500 mL HNO3
Sample Time	—	—	1200	1140	900	920
Sample Date	—	—	02/27/19	02/27/19	02/27/19	02/27/19

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald . **DATE:** 02/27/19 .

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	NA	Appendix III	Appendix IV
Depth to Water (ft)	43.23	Dry	24.81	20.87	34.12	Dry
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	10.63		33.61		24.39	—
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.73		5.48		3.98	—
Water Removed From Well (gallons)	10.0		10.25		8.0	
Method of Removal	Pump		Pump		Pump	
Was Well Purged Dry?	NO		YES		YES	
pH (standard units)	7.66		8.45		7.62	
Temperature (°C)	16.80		17.41		18.24	
Conductivity (µmhos/cc)	1243		773		1420	
Turbidity (NTU)	21.6		52.1		108	
Appearance	CLEAR		CLEAR		SLIGHTLY TURBID	
Odor	NONE		NONE		NONE	
Ohio Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	
Shreveport Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	500 mL HNO3
Sample Time	0835		1225		1000	
Sample Date	02/27/19		02/27/19		02/27/19	

DUPLICATE

For 2" well multiply by	0.163
For 4" well multiply by	0.653

LANDFILL

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 02/27/19

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Sample Identification	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Elevation of Top of Casing (ft. NGVD)	Appendix III	NA	Appendix III	NA	Appendix III	Appendix IV
Depth to Water (ft)	12.38	11.55	26.23	7.17	55.76	26.64
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10	36.71
Height of Water Column (ft.)	46.32		38.27		7.34	10.07
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	7.55		6.24		1.20	1.64
Water Removed From Well (gallons)	18.0		10.75		1.0	2.25
Method of Removal	Pump		Pump		Pump	Pump
Was Well Purged Dry?	Yes		Yes		Yes	Yes
pH (standard units)	8.28		8.03		7.58	12.34
Temperature (°C)	19.12		18.49		17.81	18.38
Conductivity (µmhos/cc)	6240		22400		1930	4240
Turbidity (NTU)	38.7		58.6		342	147
Appearance	CLEAR		CLEAR		TURBID	BROWN TINT
Odor	NONE		NONE		NONE	NONE
Ohio Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	—
Shreveport Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	500 mL HNO3
Sample Time	0810		1350		1022	1045
Sample Date	02/27/19		02/27/19		02/27/19	02/27/19

For 2" well multiply by	0.163
For 4" well multiply by	0.653

SHALLOW DUPLICATE

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald . **DATE:** 02/27/19 .

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Sample Identification	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Elevation of Top of Casing (ft. NGVD)	Appendix III	NA	Appendix III	NA	Appendix III	Appendix IV
Depth to Water (ft)	68.64	20.58	48.26	12.20	16.95	12.01
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33	36.22	50.34	31.02	44.92	22.94
Height of Water Column (ft.)	2.69		2.08		27.97	10.93
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.44		0.34		4.56	1.78
Water Removed From Well (gallons)	0.25		0.25		10.25	4.0
Method of Removal	Bailer		Bailer		Pump	Pump
Was Well Purged Dry?	Yes		Yes		Yes	Yes
pH (standard units)	—		—		8.45	7.57
Temperature (°C)	—		—		18.04	18.71
Conductivity (µmhos/cc)	—		—		1230	983
Turbidity (NTU)	—		—		158	44.6
Appearance	—		—		Turbid	Clear
Odor	—		—		None	None
Ohio Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	—
Shreveport Containers	250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3		250 mL Unpres 250mL HNO3	500 mL HNO3
Sample Time	—	—	—	—	1325	1300
Sample Date	—		—		02/27/19	02/27/19

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 02/27/19.

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	Appendix IV	Appendix III	Appendix III	Appendix III	Appendix III
Depth to Water (ft)	42.84	15.29	74.45	58.24	62.66	53.65
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.56	18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)	4.72	2.83	4.51	15.97	1.49	4.76
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.77	0.46	0.74	2.60	0.24	0.78
Water Removed From Well (gallons)	0.50	0.25	0.50	4.25	—	0.50
Method of Removal	Pump	Bailer	Bailer	Pump	—	Bailer
Was Well Purged Dry?	Yes	Yes	Yes	Yes	—	Yes
pH (standard units)	—	—	—	8.60	—	—
Temperature (°C)	—	—	—	19.25	—	—
Conductivity (µmhos/cc)	—	—	—	1245	—	—
Turbidity (NTU)	—	—	—	142	—	—
Appearance	—	—	—	turbid	—	—
Odor	—	—	—	none	—	—
Ohio Containers	250 mL Unpres 250mL HNO3	—	250 mL Unpres 250mL HNO3	250 mL Unpres 250mL HNO3	250 mL Unpres 250mL HNO3	250 mL Unpres 250mL HNO3
Shreveport Containers	250 mL Unpres 250mL HNO3	500 mL HNO3	250 mL Unpres 250mL HNO3	250 mL Unpres 250mL HNO3	250 mL Unpres 250mL HNO3	250 mL Unpres 250mL HNO3
Sample Time	—	—	—	1120	—	—
Sample Date	—	—	—	02/27/19	—	—

For 2" well multiply by	0.163
For 4" well multiply by	0.653

ATTACHMENT B
Laboratory Analytical Reports

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210689
Cust Sample ID: MW-7D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 10/04/2017
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (210689)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00128	mg/L	0.00093	1	EPA 6010B 1996	10/07/2017 3:17	J	JDB
Arsenic	0.01431	mg/L	0.00105	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Barium	0.751	mg/L	0.00015	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Beryllium	0.00118	mg/L	0.00002	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Boron	0.99	mg/L	0.00028	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Cadmium	0.00129	mg/L	0.00007	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Calcium	297	mg/L	0.48	1:50	EPA 6010B 1996	10/06/2017 20:25	M4	JDB
Chromium	0.02994	mg/L	0.00023	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Cobalt	0.01028	mg/L	0.00014	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Lead	0.01337	mg/L	0.00068	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Lithium	0.166	mg/L	0.00013	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Magnesium	74.2	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:25		JDB
Mercury	0.000028	mg/L	0.000005	1	EPA 7470A 1994	10/13/2017 9:51		LNM
Molybdenum	0.03257	mg/L	0.00029	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Potassium	15.2	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Selenium	0.01615	mg/L	0.00099	1	EPA 6010B 1996	10/07/2017 3:17		JDB
Sodium	1050	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:25	M4	JDB
Strontium	10.5	mg/L	0.05	1:50	EPA 6010B 1996	10/06/2017 20:25	M4	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	10/07/2017 3:17	U	JDB

Water (210689)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Alkalinity, Total	702	mg/L	5	1	SM 2320 B-2011	10/09/2017 10:58		JAR
Bromide	5.6	mg/L	1.0	1	EPA 300.0	10/06/2017 11:45	M6	GB
Chloride	418	mg/L	0.219	1:100	EPA 300.0	10/06/2017 13:13	M7	GB
Fluoride	2.07	mg/L	0.083	1	EPA 300.0	10/06/2017 11:45		GB
Solids, Total Dissolved (TDS)	2965	mg/L	2	1	SM 2540 C-2011	10/11/2017 7:56		JAR

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Sulfate	1257	mg/L	0.140	1:100	EPA 300.0	10/06/2017 13:13	M7	GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210690
Cust Sample ID: MW-9D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 10/04/2017
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (210690)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	10/07/2017 3:55	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	10/07/2017 3:55	U	JDB
Barium	0.41	mg/L	0.00015	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Beryllium	0.00043	mg/L	0.00002	1	EPA 6010B 1996	10/07/2017 3:55	J	JDB
Boron	6.68	mg/L	0.014	1:50	EPA 6010B 1996	10/06/2017 20:30		JDB
Cadmium	0.0024	mg/L	0.00007	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Calcium	304	mg/L	0.48	1:50	EPA 6010B 1996	10/06/2017 20:30		JDB
Chromium	0.01479	mg/L	0.00023	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Cobalt	0.00838	mg/L	0.00014	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Lead	0.00969	mg/L	0.00068	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Lithium	0.03222	mg/L	0.00013	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Magnesium	151	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:30		JDB
Mercury	0.000015	mg/L	0.000005	1	EPA 7470A 1994	10/13/2017 9:53	J	LNM
Molybdenum	0.07377	mg/L	0.00029	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Potassium	9.55	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 3:55		JDB
Selenium	0.00383	mg/L	0.00099	1	EPA 6010B 1996	10/07/2017 3:55	J	JDB
Sodium	227	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:30		JDB
Strontium	10.6	mg/L	0.05	1:50	EPA 6010B 1996	10/06/2017 20:30		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	10/07/2017 3:55	U	JDB

Water (210690)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Alkalinity, Total	342	mg/L	5	1	SM 2320 B-2011	10/09/2017 10:58		JAR
Bromide	2.1	mg/L	1.0	1	EPA 300.0	10/06/2017 13:30	M6	GB
Chloride	180	mg/L	0.219	1:10	EPA 300.0	10/06/2017 14:23	M7	GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	10/06/2017 13:30	U	GB
Solids, Total Dissolved (TDS)	2296	mg/L	2	1	SM 2540 C-2011	10/11/2017 7:56		JAR

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Sulfate	1079	mg/L	0.140	1:50	EPA 300.0	10/06/2017 14:40	M7	GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
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Fax: (318) 673-3960

AEP Sample ID : 210691
Cust Sample ID: SP-10
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 10/04/2017
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (210691)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00127	mg/L	0.00093	1	EPA 6010B 1996	10/07/2017 4:00	J	JDB
Arsenic	0.0043	mg/L	0.00105	1	EPA 6010B 1996	10/07/2017 4:00	J	JDB
Barium	0.664	mg/L	0.00015	1	EPA 6010B 1996	10/07/2017 4:00		JDB
Beryllium	0.00003	mg/L	0.00002	1	EPA 6010B 1996	10/07/2017 4:00	J	JDB
Boron	1.1	mg/L	0.00028	1	EPA 6010B 1996	10/07/2017 4:00		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	10/07/2017 4:00	U	JDB
Calcium	52.3	mg/L	0.48	1:50	EPA 6010B 1996	10/06/2017 20:35		JDB
Chromium	0.00036	mg/L	0.00023	1	EPA 6010B 1996	10/07/2017 4:00	J	JDB
Cobalt	0.00402	mg/L	0.00014	1	EPA 6010B 1996	10/07/2017 4:00	J	JDB
Lead	0.00087	mg/L	0.00068	1	EPA 6010B 1996	10/07/2017 4:00	J	JDB
Lithium	0.279	mg/L	0.00013	1	EPA 6010B 1996	10/07/2017 4:00		JDB
Magnesium	42.4	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:35		JDB
Mercury	0.000015	mg/L	0.000005	1	EPA 7470A 1994	10/13/2017 9:56	J	LNM
Molybdenum	0.02919	mg/L	0.00029	1	EPA 6010B 1996	10/07/2017 4:00		JDB
Potassium	9.18	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 4:00		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	10/07/2017 4:00	U	JDB
Sodium	1110	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:35		JDB
Strontium	14.6	mg/L	0.05	1:50	EPA 6010B 1996	10/06/2017 20:35		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	10/07/2017 4:00	U	JDB

Water (210691)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Alkalinity, Total	455	mg/L	5	1	SM 2320 B-2011	10/09/2017 10:58		JAR
Bromide	4.4	mg/L	1.0	1	EPA 300.0	10/06/2017 15:50	M6	GB
Chloride	1553	mg/L	0.219	1:50	EPA 300.0	10/06/2017 17:00	M7	GB
Fluoride	5.11	mg/L	0.083	1	EPA 300.0	10/06/2017 15:50		GB
Solids, Total Dissolved (TDS)	3660	mg/L	2	1	SM 2540 C-2011	10/11/2017 7:56		JAR

502 North Allen Ave.
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Phone: (318) 673-3802
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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Sulfate	286	mg/L	0.140	1:50	EPA 300.0	10/06/2017 17:00	M7	GB

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Phone: (318) 673-3802
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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210692
Cust Sample ID: SP-11
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 10/04/2017
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (210692)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00444	mg/L	0.00093	1	EPA 6010B 1996	10/07/2017 4:05	J	JDB
Arsenic	0.00847	mg/L	0.00105	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Barium	0.347	mg/L	0.00015	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Beryllium	0.00035	mg/L	0.00002	1	EPA 6010B 1996	10/07/2017 4:05	J	JDB
Boron	0.531	mg/L	0.00028	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Cadmium	0.00249	mg/L	0.00007	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Calcium	1110	mg/L	0.48	1:50	EPA 6010B 1996	10/06/2017 20:41		JDB
Chromium	0.02949	mg/L	0.00023	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Cobalt	0.01199	mg/L	0.00014	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Lead	0.00705	mg/L	0.00068	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Lithium	0.146	mg/L	0.00013	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Magnesium	93.4	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:41		JDB
Mercury	0.000047	mg/L	0.000005	1	EPA 7470A 1994	10/13/2017 9:59		LNM
Molybdenum	0.04214	mg/L	0.00029	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Potassium	10.7	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 4:05		JDB
Selenium	0.00327	mg/L	0.00099	1	EPA 6010B 1996	10/07/2017 4:05	J	JDB
Sodium	762	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:41		JDB
Strontium	18.6	mg/L	0.05	1:50	EPA 6010B 1996	10/06/2017 20:41		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	10/07/2017 4:05	U	JDB

Water (210692)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Alkalinity, Total	995	mg/L	5	1	SM 2320 B-2011	10/09/2017 14:03		JAR
Bromide	3.5	mg/L	1.0	1	EPA 300.0	10/06/2017 17:35	M6	GB
Chloride	744	mg/L	0.219	1:50	EPA 300.0	10/06/2017 18:45	M7	GB
Fluoride	2.90	mg/L	0.083	1	EPA 300.0	10/06/2017 17:35		GB
Solids, Total Dissolved (TDS)	2288	mg/L	0	1	SM 2540 C-2011	10/11/2017 7:56		JAR

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
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Fax: (318) 673-3960

Sulfate	305	mg/L	0.140	1:50	EPA 300.0	10/06/2017 18:45	M7	GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210693
Cust Sample ID: Duplicate
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 10/04/2017
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (210693)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	10/07/2017 4:11	U	JDB
Arsenic	0.0118	mg/L	0.00105	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Barium	1.95	mg/L	0.00015	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Beryllium	0.00003	mg/L	0.00002	1	EPA 6010B 1996	10/07/2017 4:11	J	JDB
Boron	1.03	mg/L	0.00028	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	10/07/2017 4:11	U	JDB
Calcium	55.4	mg/L	0.48	1:50	EPA 6010B 1996	10/06/2017 20:46		JDB
Chromium	0.00113	mg/L	0.00023	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Cobalt	0.00321	mg/L	0.00014	1	EPA 6010B 1996	10/07/2017 4:11	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	10/07/2017 4:11	U	JDB
Lithium	0.31	mg/L	0.00013	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Magnesium	53.9	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:46		JDB
Mercury	0.000007	mg/L	0.000005	1	EPA 7470A 1994	10/13/2017 10:02	J	LNM
Molybdenum	0.05093	mg/L	0.00029	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Potassium	11.4	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 4:11		JDB
Selenium	0.00326	mg/L	0.00099	1	EPA 6010B 1996	10/07/2017 4:11	J	JDB
Sodium	1230	mg/L	0.5	1:50	EPA 6010B 1996	10/06/2017 20:46		JDB
Strontium	18.6	mg/L	0.05	1:50	EPA 6010B 1996	10/06/2017 20:46		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	10/07/2017 4:11	U	JDB

Water (210693)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Alkalinity, Total	444	mg/L	5	1	SM 2320 B-2011	10/09/2017 10:58		JAR
Bromide	4.7	mg/L	1.0	1	EPA 300.0	10/06/2017 19:20	M6	GB
Chloride	1566	mg/L	0.219	1:100	EPA 300.0	10/06/2017 20:48	M7	GB
Fluoride	5.11	mg/L	0.083	1	EPA 300.0	10/06/2017 19:20		GB
Solids, Total Dissolved (TDS)	3772	mg/L	2	1	SM 2540 C-2011	10/11/2017 7:56		JAR

AEP ANALYTICAL CHEMISTRY SERVICES
502 North Allen Ave.
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Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Sulfate	278	mg/L	0.140	1:50	EPA 300.0	10/06/2017 20:30	M7	GB

AEP Sample ID : 210694 **Collected Date:** 10/04/2017 **By:** KM
Cust Sample ID: Equipment Blank **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210694)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Barium	0.00018	mg/L	0.00015	1	EPA 6010B 1996	10/07/2017 4:16	J	JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Boron	0.06201	mg/L	0.00028	1	EPA 6010B 1996	10/07/2017 4:16		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Calcium	< 0.0096	mg/L	0.0096	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Cobalt	< 0.00014	mg/L	0.00014	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Lithium	< 0.00013	mg/L	0.00013	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Magnesium	< 0.01	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 4:16		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	10/13/2017 10:04	U	LNM
Molybdenum	< 0.00029	mg/L	0.00029	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Potassium	< 0.01	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 4:16		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB
Sodium	0.09	mg/L	0.01	1	EPA 6010B 1996	10/07/2017 4:16		JDB
Strontium	< 0.001	mg/L	0.001	1	EPA 6010B 1996	10/07/2017 4:16		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	10/07/2017 4:16	U	JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
10/9/2017	Alkalinity, Total			50	47.2	94.4						JAR
10/9/2017	Alkalinity, Total	210693	6.8	50	47.12	94.2	50	56.65	113.3		2.1	JAR
10/9/2017	Alkalinity, Total	210692	6.96	50	49.62	99.2					6.4	JAR
10/7/2017	Antimony	210689.1	<0.00093	0.8	0.789282	98.7	0.8	0.6710821	83.9		0.3	JDB
10/7/2017	Arsenic	210689.1	<0.00105	0.8	0.8354592	104.4	0.8	0.8130851	101.6		0.2	JDB
10/7/2017	Barium	210689.1	<0.00015	0.2	0.2047555	102.4	0.2	0.2031277	101.6		0.5	JDB
10/7/2017	Beryllium	210689.1	<0.00002	0.2	0.2043889	102.2	0.2	0.1992566	99.6		0.0	JDB
10/6/2017	Boron	210277.2	<0.014	0.3	0.29602	98.7	0.3	0.3514633	117.2		0.5	JDB
10/6/2017	Boron	210285.2	0.004338	0.3	0.29602	98.7	0.3	0.260449	86.8		0.6	JDB
10/7/2017	Boron	210689.1	0.035608	0.3	0.2850504	95.0	0.3	0.301326	100.4		0.7	JDB
10/6/2017	Bromide	210628		10	10.1	101.0	10	12.5	125.0		0.0	GB
10/6/2017	Bromide	210623		10	10.2	102.0	10	13.6	136.0		0.0	GB
10/6/2017	Bromide		<1.0									GB
10/7/2017	Cadmium	210689.1	<0.00007	0.2	0.1998146	99.9	0.2	0.1901968	95.1		0.2	JDB
10/6/2017	Calcium	210277.2	<0.48	1	1.00048	100.0	1	1.0426667	104.3		1.2	JDB
10/6/2017	Calcium	210689.1	<0.48	1	0.9989677	99.9					1.3	JDB
10/6/2017	Calcium	210285.2	<0.48	1	1.00048	100.0					1.0	JDB
10/7/2017	Chromium	210689.1	<0.00023	0.4	0.3901517	97.5	0.4	0.3848206	96.2		0.2	JDB
10/7/2017	Cobalt	210689.1	<0.00014	0.2	0.1989698	99.5	0.2	0.1865731	93.3		0.1	JDB
10/6/2017	Fluoride		<1									GB
10/6/2017	Fluoride	210623		10	8.5	85.0	10	10	100.0		0.0	GB
10/6/2017	Fluoride	210628		10	10	100.0	10	10.4	104.0		0.0	GB
10/7/2017	Lead	210689.1	<0.00068	1	1.0058665	100.6	1	0.9390496	93.9		0.1	JDB
10/7/2017	Lithium	210689.1	<0.00013	0.2	0.2010271	100.5	0.2	0.2336513	116.8		0.0	JDB
10/6/2017	Magnesium	210277.2	<0.5	2	2.03224	101.6	2	1.9727333	98.6		1.1	JDB
10/6/2017	Magnesium	210689.1	<0.5	2	1.99187	99.6	100	104.86467	104.9		0.1	JDB
10/6/2017	Magnesium	210305.2	<0.5	2	2.0176231	100.9	100	97.853667	97.9		0.9	JDB
10/6/2017	Magnesium	210285.2	<0.5	2	2.03224	101.6	100	104.33187	104.3		1.6	JDB
10/6/2017	Magnesium	210295.2	<0.5	2	2.0176231	100.9	2	1.7141333	85.7		1.4	JDB
10/13/2017	Mercury	210587.1	<0.005	0.001	0.00089	89.0	0.2	0.204986	102.5		10.4	LNM
10/7/2017	Molybdenum	210689.1	<0.00029	0.2	0.1969011	98.5	0.2	0.194527	97.3		0.9	JDB
10/7/2017	Potassium	210689.1	<0.01	10	9.5453498	95.5	500	484.28163	96.9		0.4	JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36310
Date Received: 10/05/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

10/7/2017	Potassium	210305.2	<0.01	10	9.6195445	96.2	10	9.3415433	93.4		0.7	JDB
10/7/2017	Potassium	210295.2	<0.01	10	9.6195445	96.2	10	10.75361	107.5		1.4	JDB
10/7/2017	Selenium	210689.1	<0.00099	2	1.9425407	97.1	2	2.0067311	100.3		0.1	JDB
10/6/2017	Sodium	210689.1	<0.5	3	3.1366142	104.6					2.6	JDB
10/6/2017	Sodium	210305.2	<0.5	3	3.1631935	105.4					0.1	JDB
10/6/2017	Sodium	210295.2	<0.5	3	3.1631935	105.4					0.2	JDB
10/6/2017	Sodium	210285.2	<0.5	3	3.12755	104.3					0.5	JDB
10/6/2017	Sodium	210277.2	<0.5	3	3.12755	104.3					0.0	JDB
10/11/2017	Solids, Total Dissolved (TDS)	210769					2232	2108	94.4		1.4	JAR
10/11/2017	Solids, Total Dissolved (TDS)		0	401.33	408	101.7						JAR
10/6/2017	Strontium	210285.2	<0.05	0.2	0.21569	107.8					0.8	JDB
10/6/2017	Strontium	210689.1	<0.05	0.2	0.2130571	106.5					0.4	JDB
10/6/2017	Strontium	210277.2	<0.05	0.2	0.21569	107.8	0.2	0.1831533	91.6		0.8	JDB
10/6/2017	Sulfate	210623		10	10	100.0	20	16	80.0		0.0	GB
10/6/2017	Sulfate	210628		10	10	100.0	20	15	75.0		0.0	GB
10/6/2017	Sulfate		2									GB
10/7/2017	Thallium	210689.1	<0.00086	0.4	0.4079710	102.0	0.4	0.3559331	89.0		0.5	JDB

Code	***Code Description***
J	Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).
M4	The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The associated blank spike recovery was acceptable.
M6	Matrix spike recovery was high.
M7	Matrix spike recovery was low.
U	Analyte concentration below MDL.

Sandra D. Wallace
Laboratory Manager

13-Oct-17
Report Date

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

AT 10.5.17

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact: | Date: | For Lab Use Only: COC/Order #: COC#36310

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3: B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Hg, Pb, Mo, Se, TL and Na, K, Mg, Sr	Field-filter 500 mL bottle, then pH<2, HNO3: dissolved Fe and Mn	1 L bottle, Cool, 0-6C: TDS, F, Cl, SO4, and Br, Alkalinity	Three (six every 10th*) 1 L bottles, pH<2, HNO3: Ra-226, Ra-228				Sample Specific Notes:
MW-7D	10/4/2017	830	G	GW	2		X		X					210689-1 - 210689-2
MW-9D	10/4/2017	820	G	GW	2		X		X					210690-1 - 210690-2
SP-10	10/4/2017	800	G	GW	2		X		X					210691-1 - 210691-2
SP-11	10/4/2017	810	G	GW	2		X		X					210692-1 - 210692-2
DUPLICATE	10/4/2017	800	G	GW	2		X		X					210693-1 - 210693-2
EQUIPMENT BLANK	10/4/2017	840	G	GW	1		X							210694
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	10/05/17 1402		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			[signature]	10/5/17 1403

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer (Bottle)	UPS FEDEX US Mail Walk in (Shuttle)
Other	Other
	Tracking #

Client: Jill Parker/Northeastern

Received By: LBH

Received Date: 10/5/17

Open Date:

Sample Matrix: DGA PCB Oil (Water) Oil Soil

Solid Liquid Other

Container Temp Read: 4.5°C (Thermometer Serial #F04103)

Correction Factor: +1

Corrected Temp: 5.5°C

Project I.D.: 3631d

Were samples received on ice? (YES) NO

Did container arrive in good condition?	(YES)	NO
Was sample documentation received?	(YES)	NO
Was documentation filled out properly?	(YES)	NO
Were samples labeled properly?	(YES)	NO
Were correct containers used?	(YES)	NO
Were the pH's of samples appropriately checked?	(YES)	NO

Total number of sample containers: 11

Was any corrective action taken? (NO)

Person Contacted

Date & Time

Comments

Sample ID	Analysis	pH	Preservative Added / Lot #
MW-7D	Metals		/
MW-9D			/
SP-10			/
SP-11			/
Duplicate			/
Equipment Blank			/
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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210863 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: MW-3D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210863)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.878	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 4:34		JDB
Calcium	134	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:13		JDB

Water (210863)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	13	mg/L	0.219	1	EPA 300.0	10/17/2017 15:50		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	10/17/2017 15:50	U	GB
Solids, Total Dissolved (TDS)	722	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	218	mg/L	0.140	1:10	EPA 300.0	10/17/2017 16:25		GB

AEP Sample ID : 210864 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: MW-6D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210864)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	3.74	mg/L	0.014	1:50	EPA 6010B 1996	10/19/2017 23:18		JDB
Calcium	165	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:18		JDB

Water (210864)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	29	mg/L	0.219	1	EPA 300.0	10/17/2017 17:00		GB
Fluoride	0.9597	mg/L	0.083	1	EPA 300.0	10/17/2017 17:00	J	GB
Solids, Total Dissolved (TDS)	1032	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	545	mg/L	0.140	1:100	EPA 300.0	10/17/2017 17:52		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210865 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: MW-7D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210865)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	1.01	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 4:45		JDB
Calcium	392	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:23		JDB

Water (210865)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	733	mg/L	0.219	1:100	EPA 300.0	10/17/2017 23:25		GB
Fluoride	3.2363	mg/L	0.083	1	EPA 300.0	10/17/2007 22:32		GB
Solids, Total Dissolved (TDS)	4312	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	1548	mg/L	0.140	1:100	EPA 300.0	10/17/2017 23:25		GB

AEP Sample ID : 210866 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: MW-8D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210866)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	1.32	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 5:01		JDB
Calcium	445	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:39		JDB

Water (210866)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	11582	mg/L	0.219	1:100	EPA 300.0	10/18/2017 0:35		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	10/17/2017 23:42	U	GB
Solids, Total Dissolved (TDS)	21896	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	300	mg/L	0.140	1:100	EPA 300.0	10/17/2017 0:35		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
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AEP Sample ID : 210867 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: MW-9D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210867)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	7.07	mg/L	0.014	1:50	EPA 6010B 1996	10/19/2017 23:45		JDB
Calcium	288	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:45		JDB

Water (210867)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	314	mg/L	0.219	1:100	EPA 300.0	10/18/2017 1:45		GB
Fluoride	1.5191	mg/L	0.083	1	EPA 300.0	10/18/2017 0:52		GB
Solids, Total Dissolved (TDS)	2188	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	1075	mg/L	0.140	1:100	EPA 300.0	10/18/2017 1:45		GB

AEP Sample ID : 210868 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: MW-15 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210868)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	9.62	mg/L	0.014	1:50	EPA 6010B 1996	10/19/2017 23:50		JDB
Calcium	80.1	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:50		JDB

Water (210868)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	46	mg/L	0.219	1	EPA 300.0	10/18/2017 3:12		GB
Fluoride	1.9468	mg/L	0.083	1	EPA 300.0	10/18/2017 3:12		GB
Solids, Total Dissolved (TDS)	1124	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	593	mg/L	0.140	1:10	EPA 300.0	10/18/2017 4:05		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
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AEP Sample ID : 210869 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: SP-1 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210869)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.35	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 5:39		JDB
Calcium	152	mg/L	0.48	1:50	EPA 6010B 1996	10/19/2017 23:56		JDB

Water (210869)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	136	mg/L	0.219	1:10	EPA 300.0	10/18/2017 5:32		GB
Fluoride	1.4051	mg/L	0.083	1	EPA 300.0	10/18/2017 4:40		GB
Solids, Total Dissolved (TDS)	676	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	58	mg/L	0.140	1	EPA 300.0	10/18/2017 4:40		GB

AEP Sample ID : 210870 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: SP-2 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210870)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.307	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 5:44		JDB
Calcium	91.9	mg/L	0.48	1:50	EPA 6010B 1996	10/20/2017 0:01		JDB

Water (210870)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	970	mg/L	0.219	1:10	EPA 300.0	10/18/2017 6:42		GB
Fluoride	3.5881	mg/L	0.083	1	EPA 300.0	10/18/2017 5:50		GB
Solids, Total Dissolved (TDS)	2076	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	41	mg/L	0.140	1	EPA 300.0	10/18/2017 5:50		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210871 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: SP-4 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210871)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.425	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 5:49		JDB
Calcium	206	mg/L	0.48	1:50	EPA 6010B 1996	10/20/2017 0:06		JDB

Water (210871)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	431	mg/L	0.219	1:10	EPA 300.0	10/18/2017 7:52		GB
Fluoride	3.7702	mg/L	0.083	1	EPA 300.0	10/18/2017 7:00		GB
Solids, Total Dissolved (TDS)	1200	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	78	mg/L	0.140	1:10	EPA 300.0	10/18/2017 7:52		GB

AEP Sample ID : 210872 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: SP-5 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210872)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.61	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 6:05		JDB
Calcium	71	mg/L	0.48	1:50	EPA 6010B 1996	10/20/2017 0:12		JDB

Water (210872)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	630	mg/L	0.219	1:10	EPA 300.0	10/18/2017 10:12		GB
Fluoride	3.7844	mg/L	0.083	1	EPA 300.0	10/18/2017 8:10		GB
Solids, Total Dissolved (TDS)	1368	mg/L	2	1	SM 2540 C-2011	10/17/2017 14:42		JAR
Sulfate	5	mg/L	0.140	1	EPA 300.0	10/18/2017 8:10		GB

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210873 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: SP-10 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210873)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	1.03	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 6:11		JDB
Calcium	58.4	mg/L	0.48	1:50	EPA 6010B 1996	10/20/2017 0:17		JDB

Water (210873)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	1934	mg/L	0.219	1:10	EPA 300.0	10/18/2017 11:22		GB
Fluoride	7.3938	mg/L	0.083	1	EPA 300.0	10/18/2017 10:30		GB
Solids, Total Dissolved (TDS)	4060	mg/L	2	1	SM 2540 C-2011	10/17/2017 16:40		JAR
Sulfate	188	mg/L	0.140	1:10	EPA 300.0	10/18/2017 11:22		GB

AEP Sample ID : 210874 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: SP-11 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210874)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.446	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 6:16		JDB
Calcium	479	mg/L	0.48	1:50	EPA 6010B 1996	10/20/2017 0:22		JDB

Water (210874)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	824	mg/L	0.219	1:10	EPA 300.0	10/18/2017 12:32		GB
Fluoride	4.4661	mg/L	0.083	1	EPA 300.0	10/18/2017 11:40		GB
Solids, Total Dissolved (TDS)	2322	mg/L	2	1	SM 2540 C-2011	10/17/2017 16:40		JAR
Sulfate	223	mg/L	0.140	1:10	EPA 300.0	10/18/2017 12:32		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 210875 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: Duplicate **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210875)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.978	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 6:21		JDB
Calcium	49	mg/L	0.48	1:50	EPA 6010B 1996	10/20/2017 0:28		JDB

Water (210875)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	1776	mg/L	0.219	1:50	EPA 300.0	10/20/2017 17:08		GB
Fluoride	8.1573	mg/L	0.083	1	EPA 300.0	10/18/2007 12:50		GB
Solids, Total Dissolved (TDS)	3828	mg/L	2	1	SM 2540 C-2011	10/17/2017 16:40		JAR
Sulfate	132	mg/L	0.140	1:10	EPA 300.0	10/18/2017 13:42		GB

AEP Sample ID : 210876 **Collected Date:** 10/11/2017 **By:** KM/MH
Cust Sample ID: Equipment Blank **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (210876)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	0.0291	mg/L	0.00028	1	EPA 6010B 1996	10/20/2017 6:38		JDB
Calcium	< 0.0096	mg/L	0.0096	1	EPA 6010B 1996	10/20/2017 6:38	U	JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
10/19/2017	Boron	210868.2	<0.014	0.3	0.3004101	100.1	0.3	0.2681033	89.4		0.5	JDB
10/20/2017	Boron	210775.1	0.003520	0.3	0.29962	99.9	0.3	0.2884157	96.1		1.9	JDB
10/20/2017	Boron	210765.1	0.003520	0.3	0.29962	99.9	0.3	0.3049393	101.6		2.0	JDB
10/19/2017	Calcium	210868.2	<0.48	1	0.9886868	98.9	50	50.679633	101.4		0.1	JDB
10/20/2017	Calcium	210775.1	<0.0096	1	1.01977	102.0	1	0.976331	97.6		2.0	JDB
10/20/2017	Calcium	210765.1	<0.0096	1	1.01977	102.0	1	0.9553667	95.5		2.0	JDB
10/17/2017	Chloride		2									GB
10/17/2017	Chloride	210882		10	9	90.0	20	19	95.0		0.0	GB
10/17/2017	Chloride	210883	2	10	10	100.0	20	19	95.0		0.0	GB
10/18/2017	Chloride	210883	2	10	9.2	92.0	20	19	95.0		0.0	GB
10/18/2017	Chloride	210882		10	9	90.0	20	19	95.0		0.0	GB
10/18/2017	Chloride		2									GB
10/17/2017	Fluoride		<1									GB
10/17/2017	Fluoride	210882		10	10	100.0	20	18	90.0		0.0	GB
10/17/2017	Fluoride	210883	<1	10	10	100.0	20	18	90.0		0.0	GB
10/18/2017	Fluoride		<1									GB
10/18/2017	Fluoride	210882		10	10	100.0	20	18	90.0		0.0	GB
10/18/2017	Fluoride	210883	<1	10	10	100.0	20	18	90.0		0.0	GB
10/17/2017	Solids, Total Dissolved (TDS)	210874	0	401.33	430	107.1	1078	1022	94.8		0.9	JAR
10/17/2017	Solids, Total Dissolved (TDS)	210872	0	401.33	424	105.6	2678	2604	97.2		0.3	JAR
10/17/2017	Sulfate		2									GB
10/17/2017	Sulfate	210883	2	1	10	1000.0	20	17	85.0		0.0	GB
10/17/2017	Sulfate	210882		10	10	100.0	20	19	95.0		0.0	GB
10/18/2017	Sulfate	210883	2	10	9.2	92.0	20	17	85.0		0.0	GB
10/18/2017	Sulfate	210882		10	9	90.0	20	19	95.0		0.0	GB
10/18/2017	Sulfate		2									GB

Code	***Code Description***
J	Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).
U	Analyte concentration below MDL.

502 North Allen Ave.
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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36340
Date Received: 10/12/2017

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Sandra D. Wallace
Laboratory Manager

23-Oct-17
Report Date

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

10 3. 10/12/17

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald Matt Hamilton

Analysis Turnaround Time (In Calendar Days)
(•) Routine (28 days for Monitoring Wells)

Site Contact: | Date:

For Lab Use Only:
COC/Order #: COC#36340

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3 — B, Ca	Field-filter 500 mL bottle, then pH<2, HNO3 — dissolved Fe and Mn	1 L bottle, Cool, 0-6C — TDS, F, Cl, SO4	Three (six every 10th*) 1 L bottles, pH<2, HNO3 — Ra-226, Ra-228				Sample Specific Notes:
MW-3D	10/11/2017	930	G	GW	2		X		X					210863.1 - 210863.2
MW-6D	10/11/2017	920	G	GW	2		X		X					210864.1 - 210864.2
MW-7D	10/11/2017	940	G	GW	2		X		X					210865.1 - 210865.2
MW-8D	10/11/2017	850	G	GW	2		X		X					210866.1 - 210866.2
MW-9D	10/11/2017	910	G	GW	2		X		X					210867.1 - 210867.2
MW-15	10/11/2017	900	G	GW	2		X		X					210868.1 - 210868.2
SP-1	10/11/2017	840	G	GW	2		X		X					210869.1 - 210869.2
SP-2	10/11/2017	830	G	GW	2		X		X					210870.1 - 210870.2
SP-4	10/11/2017	800	G	GW	2		X		X					210871.1 - 210871.2
SP-5	10/11/2017	750	G	GW	2		X		X					210872.1 - 210872.2
SP-10	10/11/2017	810	G	GW	2		X		X					210873.1 - 210873.2
SP-11	10/11/2017	820	G	GW	2		X		X					210874.1 - 210874.2
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	10/12/17 1051		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 10/12/17 1055

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald Matt Hamilton

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact: | Date:

For Lab Use Only:
COC/Order #: COC#36340

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3 B, Ca	Field-filter 500 mL bottle, then pH<2, HNO3 dissolved Fe and Mn	1 L bottle, Cool, 0-6C TDS, F, Cl, SO4	Three (six every 10th*) 1 L bottles, pH<2, HNO3 Ra-226, Ra-228				Sample Specific Notes:
DUPLICATE	10/11/2017	810	G	GW	2		X		X					210875.1 - 210875.2
EQUIPMENT BLANK	10/11/2017	950	G	GW	1		X							210876
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

* *Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	10/12/17 1051		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			[signature]	10/12/17 1055

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail (Walk in) Shuttle
Other	Other
	Tracking #

Client NECCR
Received By SAR
Received Date 10/12/17
Open Date

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read 1.5°C
Thermometer Serial #F04103
Correction Factor +1°C
Corrected Temp 2°C

Project I.D. 36340

Were samples received on ice? (YES) NO

Did container arrive in good condition?	(YES)	NO
Was sample documentation received?	(YES)	NO
Was documentation filled out properly?	(YES)	NO
Were samples labeled properly?	(YES)	NO-
Were correct containers used?	(YES)	NO
Were the pH's of samples appropriately checked?	(YES)	NO pH: L2

Total number of sample containers 27

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 36899
Date Received: 01/24/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 212939 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: MW-6D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (212939)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	4.24	mg/L	0.014	1:50	EPA 6010B 1996	01/31/2018 17:04		JDB

Water (212939)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Fluoride	0.76	mg/L	0.083	1	EPA 300.0	02/07/2018 0:00	Q18,J	Q18
Sulfate	494	mg/L	0.140	1	EPA 300.0	02/07/2018 0:00	Q18	Q18

AEP Sample ID : 212940 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: MW-9D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (212940)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	7.43	mg/L	0.014	1:50	EPA 6010B 1996	01/31/2018 17:10		JDB

AEP Sample ID : 212941 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: MW-15 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (212941)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	9.16	mg/L	0.014	1:50	EPA 6010B 1996	01/31/2018 17:15		JDB

AEP Sample ID : 212942 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: SP-1 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (212942)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Calcium	119	mg/L	0.48	1:50	EPA 6010B 1996	01/31/2018 17:21		JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36899
Date Received: 01/24/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 212943 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: SP-2 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (212943)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	975	mg/L	0.219	1	EPA 300.0	02/07/2018 0:00	Q18	Q18
Solids, Total Dissolved (TDS)	1910	mg/L	2	1	SM 2540 C-2011	01/26/2018 17:00		LBH

AEP Sample ID : 212944 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: SP-10 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (212944)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Boron	1.08	mg/L	0.00028	1	EPA 6010B 1996	01/31/2018 18:30		JDB

Water (212944)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	1630	mg/L	0.219	1	EPA 300.0	02/07/2018 0:00	Q18	Q18
Fluoride	5.71	mg/L	0.083	1	EPA 300.0	02/07/2018 0:00	Q18	Q18
Solids, Total Dissolved (TDS)	3236	mg/L	2	1	SM 2540 C-2011	01/26/2018 17:00		LBH
Sulfate	63.1	mg/L	0.140	1	EPA 300.0	02/07/2018 0:00	Q18	Q18

AEP Sample ID : 212945 **Collected Date:** 01/22/2018 **By:** KM
Cust Sample ID: SP-11 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (212945)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	470	mg/L	0.219	1	EPA 300.0	02/07/2018 0:00	Q18	Q18
Fluoride	2.96	mg/L	0.083	1	EPA 300.0	02/07/2018 0:00	Q18	Q18
Solids, Total Dissolved (TDS)	1544	mg/L	2	1	SM 2540 C-2011	01/26/2018 17:00		LBH
Sulfate	222	mg/L	0.140	1	EPA 300.0	02/07/2018 0:00	Q18	Q18

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 36899
Date Received: 01/24/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
1/31/2018	Boron	212939.2	<0.014	0.3	0.30296	101.0	0.3	0.2841	94.7		0.5	JDB
1/26/2018	Solids, Total Dissolved (TDS)	212943.1									2.2	LBH
1/26/2018	Solids, Total Dissolved (TDS)		<2									LBH
1/26/2018	Solids, Total Dissolved (TDS)			196	184	93.9						LBH
1/26/2018	Solids, Total Dissolved (TDS)						3120	2914	93.4			LBH

Code	***Code Description***
J	Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).
Q18	Analysis was performed by a contracted Laboratory. See attached report.

Sandra D. Wallace
Laboratory Manager

08-Feb-18
Report Date

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport, LA 71101
Contacts: ***Jonathan Barnhill (318-673-3803)***
John Davis (318-673-3811)

Chain of Custody Record

JAR 1/24/18

Program: Coal Combustion Residuals (CCR)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact:
Date:
For Lab Use Only:
COC/Order #: COC# 36899

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	Fluoride, Sulfate (1 L bottle, Cool, 0-6C)	TDS, Chloride (1 L bottle, Cool, 0-6C)	TDS, Chloride, Fluoride, Sulfate (1 L bottle, Cool, 0-6C)	Boron (500 mL bottle, pH<2, HNO3)	Calcium (500 mL bottle, pH<2, HNO3)					Sample Specific Notes:
MW-6D	1/22/2018	1400	G	GW	2		X			X						212939.1-212939.2
MW-9D	1/22/2018	1340	G	GW	1					X						212940
MW-15	1/22/2018	1320	G	GW	1					X						212941
SP-1	1/22/2018	1520	G	GW	1						X					212942
SP-2	1/22/2018	1500	G	GW	1			X								212943
SP-10	1/22/2018	1420	G	GW	2				X	X						212944.1-212944.2
SP-11	1/22/2018	1440	G	GW	1				X							212945
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _______; F= filter in field							1	1	1	4	4					

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by: [signature]	Company: EAGLE	Date/Time: 01/24/18 1116	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 1/24/18 1116

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type					Delivery Type				
(Ice Chest)	Bag	Action Pak	PCB Mailer	Bottle	UPS	FEDEX	US Mail	Walk in	(Shuttle)
Other					Other				
					Tracking #				

Client: Jill Parker
Received By: LBH
Received Date: 1/24/18
Open Date:

Sample Matrix: DGA | PCB Oil | (Water) | Oil | Soil
Solid | Liquid | Other

Container Temp Read: 1.5°C
Thermometer Serial #F04103
Correction Factor: +1
Corrected Temp: 2.5°C

Project I.D. 36899

Were samples received on ice? (YES) NO

Did container arrive in good condition?	(YES)	NO
Was sample documentation received?	(YES)	NO
Was documentation filled out properly?	(YES)	NO
Were samples labeled properly?	(YES)	NO
Were correct containers used?	(YES)	NO
Were the pH's of samples appropriately checked?	(YES)	NO

Total number of sample containers: 9

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

Sample ID	Analysis	pH	Preservative Added / Lot #
MW-6D	Boron	<2	/
MW-9D	Boron		/
MW-15	Boron		/
SP-1	Calcium		Nitric / 1115070
SP-10	Boron		Nitric / 1115070
			/
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			/
			/
			/

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Shreveport Chemical Laboratory ***Report Date: 2/8/2018***

MW-6D — Northeastern Plant

Sample Number: 180447-001 **Date Collected: 01/22/2018 14:00** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Fluoride, F	0.76	mg/L		0.2	0.05	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	494	mg/L		1	0.5	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Northeastern Plant

SP-2 — Northeastern Plant

Sample Number: 180447-002 **Date Collected: 01/22/2018 15:00** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	975	mg/L		8	2	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Northeastern Plant

SP-10 — Northeastern Plant

Sample Number: 180447-003 **Date Collected: 01/22/2018 14:20** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	1630	mg/L		8	2	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0
Fluoride, F	5.71	mg/L		0.8	0.2	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	63.1	mg/L		1	0.5	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Northeastern Plant

SP-11 — Northeastern Plant

Sample Number: 180447-004 **Date Collected: 01/22/2018 14:40** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	470	mg/L		8	2	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0
Fluoride, F	2.96	mg/L		0.3	0.1	CRJ	02/08/2018	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	222	mg/L		0.5	0.2	CRJ	02/08/2018	EPA 300.1-1997, Rev. 1.0

Northeastern Plant

AD-11 — Welsh Plant

Sample Number: 180447-005 **Date Collected: 01/18/2018 10:42** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	377	mg/L		2	1	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Welsh Plant

AD-13 **Welsh Plant**

Sample Number: 180447-006 **Date Collected: 01/18/2018 11:37** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	383	mg/L		2	1	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Welsh Plant

AD-14 **Welsh Plant**

Sample Number: 180447-007 **Date Collected: 01/18/2018 11:12** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	6.43	mg/L		0.06	0.02	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Welsh Plant

AD-16 **Welsh Plant**

Sample Number: 180447-008 **Date Collected: 01/18/2018 12:12** **Date Received: 2/7/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	58.6	mg/L		0.1	0.04	TEA	02/07/2018	EPA 300.1-1997, Rev. 1.0

Welsh Plant

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Dave Conover, Chemist Principal

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Fax 614-836-4168 *Audinet 210-4219*

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Shreveport, LA 71101
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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216017
Cust Sample ID: MW-2D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216017)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00212	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Arsenic	0.03715	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Barium	0.00962	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:09	U	JDB
Boron	10.5	mg/L	0.014	1:50	EPA 6010B 1996	05/30/2018 20:12		JDB
Cadmium	0.0003	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Calcium	7.52	mg/L	0.0096	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:09	U	JDB
Cobalt	0.00036	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:09	U	JDB
Lithium	0.0006	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Mercury	0.000046	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 13:42		LNM
Molybdenum	0.588	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Selenium	0.08277	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Thallium	0.0011	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB

Water (216017)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	14	mg/L	0.219	1	EPA 300.0	05/16/2018 23:48		GB
Fluoride	2.028	mg/L	0.083	1	EPA 300.0	05/16/2018 23:48		GB
Solids, Total Dissolved (TDS)	1206	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	628	mg/L	0.140	1:10	EPA 300.0	05/17/2018 0:07		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216018
Cust Sample ID: MW-3D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216018)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Arsenic	0.00138	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Barium	0.107	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:14		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Boron	1.08	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 4:14		JDB
Cadmium	0.00009	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Calcium	127	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:17		JDB
Chromium	0.00024	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Cobalt	0.00104	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Lithium	0.01568	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:14		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 13:50	U	LNM
Molybdenum	0.00293	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB

Water (216018)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	13	mg/L	0.219	1	EPA 300.0	05/17/2018 0:26		GB
Fluoride	0.757	mg/L	0.083	1	EPA 300.0	05/17/2018 0:26	U	GB
Solids, Total Dissolved (TDS)	736	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	196	mg/L	0.140	1:10	EPA 300.0	05/17/2018 0:45		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216019
Cust Sample ID: MW-4D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216019)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00405	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Arsenic	0.0023	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Barium	0.171	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:30	U	JDB
Boron	1.21	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Cadmium	0.00014	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Calcium	192	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:22		JDB
Chromium	0.00137	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Cobalt	0.00236	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Lead	0.00147	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Lithium	0.00533	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:12	U	LNM
Molybdenum	0.00674	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:30	U	JDB
Thallium	0.00119	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB

Water (216019)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	22	mg/L	0.219	1	EPA 300.0	05/17/2018 1:04		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	05/17/2018 1:04	U	GB
Solids, Total Dissolved (TDS)	984	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	328	mg/L	0.140	1:10	EPA 300.0	05/17/2018 1:22		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216020
Cust Sample ID: MW-5D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216020)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00291	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Arsenic	0.00124	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Barium	0.127	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:57		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:57	U	JDB
Boron	0.476	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 4:57		JDB
Cadmium	0.00036	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Calcium	132	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:27		JDB
Chromium	0.00059	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Cobalt	0.00114	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Lead	0.00101	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Lithium	0.01243	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:57		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:20	U	LNM
Molybdenum	0.00133	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Selenium	0.00135	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Thallium	0.00125	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB

Water (216020)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	25	mg/L	0.219	1	EPA 300.0	01/17/2018 1:41		GB
Fluoride	0.703	mg/L	0.083	1	EPA 300.0	05/17/2018 1:41	J	GB
Solids, Total Dissolved (TDS)	636	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	126	mg/L	0.140	1:10	EPA 300.0	05/17/2018 2:00		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216021
Cust Sample ID: MW-6D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216021)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00132	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Arsenic	0.00238	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Barium	0.07224	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:02	U	JDB
Boron	3.52	mg/L	0.014	1:50	EPA 6010B 1996	05/30/2018 20:32		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:02	U	JDB
Calcium	173	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:32		JDB
Chromium	0.00151	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Cobalt	0.00182	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Lead	0.00129	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Lithium	0.01975	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:23	U	LNM
Molybdenum	0.09145	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:02	U	JDB
Thallium	0.00102	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB

Water (216021)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	31	mg/L	0.219	1	EPA 300.0	05/17/2018 2:19		GB
Fluoride	0.806	mg/L	0.083	1	EPA 300.0	05/17/2018 2:19	J	GB
Solids, Total Dissolved (TDS)	1062	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	406	mg/L	0.140	1:10	EPA 300.0	05/17/2018 2:38		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216022
Cust Sample ID: MW-12D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216022)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:07	U	JDB
Arsenic	0.00156	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Barium	0.121	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Beryllium	0.00013	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Boron	8.63	mg/L	0.014	1:50	EPA 6010B 1996	05/30/2018 20:37		JDB
Cadmium	0.0008	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Calcium	184	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:37		JDB
Chromium	0.00795	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Cobalt	0.00352	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Lead	0.00703	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Lithium	0.00841	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Mercury	0.000013	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:25	J	LNM
Molybdenum	0.693	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Selenium	0.0045	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:07	U	JDB

Water (216022)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	17	mg/L	0.219	1	EPA 300.0	05/17/2018 3:53		GB
Fluoride	2.199	mg/L	0.083	1	EPA 300.0	05/17/2018 3:53		GB
Solids, Total Dissolved (TDS)	1044	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	541	mg/L	0.140	1:10	EPA 300.0	05/17/2018 4:12		GB

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Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216023
Cust Sample ID: MW-13D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216023)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Barium	0.04884	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Boron	1.08	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Cadmium	0.00013	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:12	J	JDB
Calcium	172	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:42		JDB
Chromium	0.0008	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:12	J	JDB
Cobalt	0.00161	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:12	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Lithium	0.02997	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:28	U	LNM
Molybdenum	0.01238	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Selenium	0.01193	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB

Water (216023)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	5	mg/L	0.219	1	EPA 300.0	05/17/2018 5:08		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	05/17/2018 5:08	U	GB
Solids, Total Dissolved (TDS)	1064	mg/L	2	1	SM 2540 C-2011	05/08/2018 14:00		JTD
Sulfate	354	mg/L	0.140	1:10	EPA 300.0	05/17/2018 5:27		GB

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216024
Cust Sample ID: DUP
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216024)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB
Arsenic	0.00111	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Barium	0.109	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:18		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB
Boron	1.01	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 5:18		JDB
Cadmium	0.0001	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Calcium	124	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:57		JDB
Chromium	0.0007	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Cobalt	0.00127	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Lead	0.0008	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Lithium	0.01516	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:18		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:31	U	LNM
Molybdenum	0.00259	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB

Water (216024)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	12	mg/L	0.219	1	EPA 300.0	05/17/2018 6:24		GB
Fluoride	0.783	mg/L	0.083	1	EPA 300.0	05/17/2018 6:24	J	GB
Solids, Total Dissolved (TDS)	728	mg/L	2	1	SM 2540 C-2011	05/08/2018 14:00		JTD
Sulfate	214	mg/L	0.140	1:10	EPA 300.0	05/17/2018 7:58		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216025 **Collected Date:** 05/02/2018 **By:** KM
Cust Sample ID: Equipment Blank **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (216025)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00419	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:33	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Barium	< 0.00015	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Boron	0.05525	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 5:33		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Calcium	< 0.0096	mg/L	0.0096	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Cobalt	< 0.00014	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Lithium	< 0.00013	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:34	U	LNM
Molybdenum	0.00055	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:33	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
5/31/2018	Antimony	216019.2	0.005019	0.8	0.8273685	103.4	0.8	0.8112554	101.4		0.2	JDB
5/31/2018	Antimony	216009.1	0.004033	0.8	0.8267759	103.3	0.8	0.7874176	98.4		0.1	JDB
5/31/2018	Antimony	215157.1	0.004033	0.8	0.8267759	103.3	0.8	0.8258387	103.2		0.4	JDB
5/31/2018	Arsenic	216019.2	<0.00105	0.8	0.8200254	102.5	0.8	0.8072418	100.9		0.2	JDB
5/31/2018	Arsenic	216009.1	0.001417	0.8	0.8260430	103.3	0.8	0.7852755	98.2		0.6	JDB
5/31/2018	Arsenic	215157.1	0.001417	0.8	0.8260430	103.3	0.8	0.8173489	102.2		0.9	JDB
5/31/2018	Barium	215157.1	<0.00015	0.2	0.2125247	106.3	0.2	0.2033549	101.7		0.6	JDB
5/31/2018	Barium	216019.2	<0.00015	0.2	0.2102812	105.1	0.2	0.1997377	99.9		0.1	JDB
5/31/2018	Barium	216009.1	<0.00015	0.2	0.2125247	106.3	0.2	0.1943424	97.2		1.6	JDB
5/31/2018	Beryllium	216019.2	<0.00002	0.2	0.2060517	103.0	0.2	0.2050819	102.5		0.5	JDB
5/31/2018	Beryllium	216009.1	<0.00002	0.2	0.2085850	104.3	0.2	0.2006993	100.3		0.3	JDB
5/31/2018	Beryllium	215157.1	<0.00002	0.2	0.2085850	104.3	0.2	0.2067083	103.4		0.2	JDB
5/30/2018	Boron	215129.1	0.005183	0.3	0.30363	101.2	0.3	0.3087853	102.9		0.3	JDB
5/31/2018	Boron	216019.2	0.044382	0.3	0.2990235	99.7	15	18.631447	124.2		3.9	JDB
5/31/2018	Cadmium	216019.2	<0.00007	0.2	0.2046035	102.3	0.2	0.1975905	98.8		0.3	JDB
5/31/2018	Cadmium	216009.1	<0.00007	0.2	0.2059064	103.0	0.2	0.1951314	97.6		0.4	JDB
5/31/2018	Cadmium	215157.1	<0.00007	0.2	0.2059064	103.0	0.2	0.2041354	102.1		0.5	JDB
5/30/2018	Calcium	216019.2	<0.48	1	1.0248191	102.5	50	59.200167	118.4		0.2	JDB
5/30/2018	Calcium	215129.1	0.052046	1	0.96387	96.4	1	0.93694	93.7		1.3	JDB
5/16/2018	Chloride			20	18.1	90.5						GB
5/16/2018	Chloride	216024	<0.219	20	18.3	91.5	50	66	132.0		0.0	GB
5/16/2018	Chloride		<0.219									GB
5/17/2018	Chloride		<0.219									GB
5/17/2018	Chloride	216024	<0.219	20	18.3	91.5	50	66	132.0		0.0	GB
5/17/2018	Chloride			20	18.1	90.5						GB
5/31/2018	Chromium	216019.2	<0.00023	0.4	0.4052233	101.3	0.4	0.4002418	100.1		0.6	JDB
5/31/2018	Chromium	216009.1	<0.00023	0.4	0.4088557	102.2	0.4	0.3885853	97.1		0.2	JDB
5/31/2018	Chromium	215157.1	<0.00023	0.4	0.4088557	102.2	0.4	0.4045946	101.1		0.1	JDB
5/31/2018	Cobalt	215157.1	<0.00014	0.2	0.2044290	102.2	0.2	0.2020274	101.0		0.0	JDB
5/31/2018	Cobalt	216009.1	<0.00014	0.2	0.2044290	102.2	0.2	0.192514	96.3		0.4	JDB
5/31/2018	Cobalt	216019.2	<0.00014	0.2	0.202216	101.1	0.2	0.198529	99.3		0.9	JDB
5/16/2018	Fluoride	216024	<0.083	10	11	110.0	20	25.92	129.6		0.0	GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

5/16/2018	Fluoride		<0.083									GB
5/16/2018	Fluoride			10	11	110.0						GB
5/17/2018	Fluoride			10	11	110.0						GB
5/17/2018	Fluoride		<0.083									GB
5/17/2018	Fluoride	216024	<0.083	10	11	110.0	20	25.92	129.6		0.0	GB
5/31/2018	Lead	216009.1	<0.00068	1	1.0164545	101.6	1	0.9594413	95.9		0.3	JDB
5/31/2018	Lead	215157.1	<0.00068	1	1.0164545	101.6	1	1.0046001	100.5		0.2	JDB
5/31/2018	Lead	216019.2	<0.00068	1	1.0087892	100.9	1	0.9835240	98.4		0.3	JDB
5/31/2018	Lithium	216019.2	<0.00013	0.2	0.2062583	103.1	0.2	0.215069	107.5		0.4	JDB
5/31/2018	Lithium	216009.1	<0.00013	0.2	0.2059778	103.0	0.2	0.2166713	108.3		0.5	JDB
5/31/2018	Lithium	215157.1	<0.00013	0.2	0.2059778	103.0	0.2	0.2089146	104.5		0.3	JDB
5/17/2018	Mercury	216018.2	<0.00000	0.001	0.0008679	86.8	0.001	0.0009932	99.3		4.5	LNM
5/17/2018	Mercury	216008.1	<0.00000	0.001	0.00099	99.0	0.001	0.0009596	96.0		2.6	LNM
5/31/2018	Molybdenum	216019.2	0.000525	0.2	0.2015659	100.8	0.2	0.2012397	100.6		0.1	JDB
5/31/2018	Molybdenum	215157.1	0.000361	0.2	0.2031598	101.6	0.2	0.2014463	100.7		0.2	JDB
5/31/2018	Molybdenum	216009.1	0.000361	0.2	0.2031598	101.6	0.2	0.195156	97.6		0.3	JDB
5/31/2018	Selenium	216009.1	0.001072	2	2.0125011	100.6	2	1.9585120	97.9		0.3	JDB
5/31/2018	Selenium	215157.1	0.001072	2	2.0125011	100.6	2	2.0058802	100.3		0.8	JDB
5/31/2018	Selenium	216019.2	0.001851	2	2.0135684	100.7	2	1.9745820	98.7		0.2	JDB
5/7/2018	Solids, Total Dissolved (TDS)	216021	<2	101.67	106	104.3	2214	2178	98.4		1.7	LBH
5/8/2018	Solids, Total Dissolved (TDS)	216023	<2	101.67	106	104.3	2140	2124	99.3		0.8	JTD
5/17/2018	Sulfate		<0.140									GB
5/17/2018	Sulfate	216024	<0.140	20	18	90.0	50	46	92.0		8.4	GB
5/17/2018	Sulfate			20	18	90.0						GB
5/31/2018	Thallium	215157.1	0.001182	0.4	0.4102024	102.6	0.4	0.4039268	101.0		0.7	JDB
5/31/2018	Thallium	216019.2	0.000868	0.4	0.4064212	101.6	0.4	0.3913926	97.8		0.1	JDB
5/31/2018	Thallium	216009.1	0.001182	0.4	0.4102024	102.6	0.4	0.3745872	93.6		0.2	JDB

Code ***Code Description***

J Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).

U Analyte concentration below MDL.

Sandra G. Wallace
Laboratory Manager

12-Jul-18
Report Date

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

AT 5.4.18

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact:

Date:

For Lab Use Only:
COC/Order #: COC# 37591

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3: B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, TL	Field-filter 500 mL bottle, then pH<2, HNO3: dissolved Fe and Mn	1 L bottle, Cool, 0-6C: TDS, F, Cl, SO4	Three (six every 10th*) 1 L bottles, pH<2, HNO3: Ra-226, Ra-228				Sample Specific Notes:
MW-2D	5/2/2018	1035	G	GW	2		X		X					216017.1 - 216017.2
MW-3D	5/2/2018	940	G	GW	2		X		X					216018.1 - 216018.2
MW-4D	5/2/2018	920	G	GW	2		X		X					216019.1 - 216019.2
MW-5D	5/2/2018	1105	G	GW	2		X		X					216020.1 - 216020.2
MW-6D	5/2/2018	1010	G	GW	2		X		X					216021.1 - 216021.2
MW-12D	5/2/2018	1140	G	GW	2		X		X					216022.1 - 216022.2
MW-13D	5/2/2018	1130	G	GW	2		X		X					216023.1 - 216023.2
DUP	5/2/2018	940	G	GW	2		X		X					216024.1 - 216024.2
EQUIPMENT BLANK	5/2/2018	1215	G	W	1		X							216025
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by: [signature]	Company: EAGLE	Date/Time: 05/03/18 1323	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 5/3/18 1:35

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail Walk in (Shuttle)
Other	Other
	Tracking #

Client: Jill Parker
Received By: JTD
Received Date: 5/3/18
Open Date: 5/3/18

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read: 2 (Thermometer Serial #F04103)
Correction Factor: +1.2
Corrected Temp: 3.2

Project I.D. 37591

Were samples received on ice? (YES) NO

Did container arrive in good condition? (YES) NO

Was sample documentation received? (YES) NO

Was documentation filled out properly? (YES) NO

Were samples labeled properly? (YES) NO

Were correct containers used? (YES) NO

Were the pH's of samples appropriately checked? (YES) NO

Total number of sample containers: 17

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

Sample ID	Analysis	pH	Preservative Added / Lot #
MW-2D	Metals	<2	/
MW-3D			/
MW-4D			/
MW-5D			/
MW-6D			/
MW-12D			/
MW-13D			/
Dup			/
Equip Blank			/
			/
			/
			/
			/
			/
			/
			/
			/
			/
			/
			/

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216017
Cust Sample ID: MW-2D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216017)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00212	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Arsenic	0.03715	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Barium	0.00962	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:09	U	JDB
Boron	10.5	mg/L	0.014	1:50	EPA 6010B 1996	05/30/2018 20:12		JDB
Cadmium	0.0003	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Calcium	7.52	mg/L	0.0096	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:09	U	JDB
Cobalt	0.00036	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:09	U	JDB
Lithium	0.0006	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB
Mercury	0.000046	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 13:42		LNM
Molybdenum	0.588	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Selenium	0.08277	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:09		JDB
Thallium	0.0011	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:09	J	JDB

Water (216017)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	14	mg/L	0.219	1	EPA 300.0	05/16/2018 23:48		GB
Fluoride	2.028	mg/L	0.083	1	EPA 300.0	05/16/2018 23:48		GB
Solids, Total Dissolved (TDS)	1206	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	628	mg/L	0.140	1:10	EPA 300.0	05/17/2018 0:07		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
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AEP Sample ID : 216018
Cust Sample ID: MW-3D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216018)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Arsenic	0.00138	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Barium	0.107	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:14		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Boron	1.08	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 4:14		JDB
Cadmium	0.00009	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Calcium	127	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:17		JDB
Chromium	0.00024	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Cobalt	0.00104	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Lithium	0.01568	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:14		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 13:50	U	LNM
Molybdenum	0.00293	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:14	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:14	U	JDB

Water (216018)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	13	mg/L	0.219	1	EPA 300.0	05/17/2018 0:26		GB
Fluoride	0.757	mg/L	0.083	1	EPA 300.0	05/17/2018 0:26	U	GB
Solids, Total Dissolved (TDS)	736	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	196	mg/L	0.140	1:10	EPA 300.0	05/17/2018 0:45		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
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Company: SEP - Environmental (JP-W)
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AEP Sample ID : 216019
Cust Sample ID: MW-4D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216019)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00405	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Arsenic	0.0023	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Barium	0.171	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:30	U	JDB
Boron	1.21	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Cadmium	0.00014	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Calcium	192	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:22		JDB
Chromium	0.00137	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Cobalt	0.00236	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Lead	0.00147	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB
Lithium	0.00533	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:12	U	LNM
Molybdenum	0.00674	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:30		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:30	U	JDB
Thallium	0.00119	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:30	J	JDB

Water (216019)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	22	mg/L	0.219	1	EPA 300.0	05/17/2018 1:04		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	05/17/2018 1:04	U	GB
Solids, Total Dissolved (TDS)	984	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	328	mg/L	0.140	1:10	EPA 300.0	05/17/2018 1:22		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

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Company: SEP - Environmental (JP-W)
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AEP Sample ID : 216020
Cust Sample ID: MW-5D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216020)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00291	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Arsenic	0.00124	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Barium	0.127	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 4:57		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 4:57	U	JDB
Boron	0.476	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 4:57		JDB
Cadmium	0.00036	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Calcium	132	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:27		JDB
Chromium	0.00059	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Cobalt	0.00114	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Lead	0.00101	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Lithium	0.01243	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 4:57		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:20	U	LNM
Molybdenum	0.00133	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Selenium	0.00135	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB
Thallium	0.00125	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 4:57	J	JDB

Water (216020)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	25	mg/L	0.219	1	EPA 300.0	01/17/2018 1:41		GB
Fluoride	0.703	mg/L	0.083	1	EPA 300.0	05/17/2018 1:41	J	GB
Solids, Total Dissolved (TDS)	636	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	126	mg/L	0.140	1:10	EPA 300.0	05/17/2018 2:00		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

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Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
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AEP Sample ID : 216021
Cust Sample ID: MW-6D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216021)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00132	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Arsenic	0.00238	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Barium	0.07224	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:02	U	JDB
Boron	3.52	mg/L	0.014	1:50	EPA 6010B 1996	05/30/2018 20:32		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:02	U	JDB
Calcium	173	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:32		JDB
Chromium	0.00151	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Cobalt	0.00182	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Lead	0.00129	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB
Lithium	0.01975	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:23	U	LNM
Molybdenum	0.09145	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:02		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:02	U	JDB
Thallium	0.00102	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:02	J	JDB

Water (216021)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	31	mg/L	0.219	1	EPA 300.0	05/17/2018 2:19		GB
Fluoride	0.806	mg/L	0.083	1	EPA 300.0	05/17/2018 2:19	J	GB
Solids, Total Dissolved (TDS)	1062	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	406	mg/L	0.140	1:10	EPA 300.0	05/17/2018 2:38		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

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Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
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AEP Sample ID : 216022
Cust Sample ID: MW-12D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216022)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:07	U	JDB
Arsenic	0.00156	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Barium	0.121	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Beryllium	0.00013	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Boron	8.63	mg/L	0.014	1:50	EPA 6010B 1996	05/30/2018 20:37		JDB
Cadmium	0.0008	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Calcium	184	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:37		JDB
Chromium	0.00795	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Cobalt	0.00352	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Lead	0.00703	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Lithium	0.00841	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Mercury	0.000013	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:25	J	LNM
Molybdenum	0.693	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:07		JDB
Selenium	0.0045	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:07	J	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:07	U	JDB

Water (216022)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	17	mg/L	0.219	1	EPA 300.0	05/17/2018 3:53		GB
Fluoride	2.199	mg/L	0.083	1	EPA 300.0	05/17/2018 3:53		GB
Solids, Total Dissolved (TDS)	1044	mg/L	2	1	SM 2540 C-2011	05/07/2018 10:00		LBH
Sulfate	541	mg/L	0.140	1:10	EPA 300.0	05/17/2018 4:12		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
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AEP Sample ID : 216023
Cust Sample ID: MW-13D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216023)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Barium	0.04884	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Boron	1.08	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Cadmium	0.00013	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:12	J	JDB
Calcium	172	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:42		JDB
Chromium	0.0008	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:12	J	JDB
Cobalt	0.00161	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:12	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB
Lithium	0.02997	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:28	U	LNM
Molybdenum	0.01238	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Selenium	0.01193	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:12		JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:12	U	JDB

Water (216023)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	5	mg/L	0.219	1	EPA 300.0	05/17/2018 5:08		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	05/17/2018 5:08	U	GB
Solids, Total Dissolved (TDS)	1064	mg/L	2	1	SM 2540 C-2011	05/08/2018 14:00		JTD
Sulfate	354	mg/L	0.140	1:10	EPA 300.0	05/17/2018 5:27		GB

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AEP ANALYTICAL CHEMISTRY SERVICES

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Company: SEP - Environmental (JP-W)
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AEP Sample ID : 216024
Cust Sample ID: DUP
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/02/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216024)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB
Arsenic	0.00111	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Barium	0.109	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:18		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB
Boron	1.01	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 5:18		JDB
Cadmium	0.0001	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Calcium	124	mg/L	0.48	1:50	EPA 6010B 1996	05/30/2018 20:57		JDB
Chromium	0.0007	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Cobalt	0.00127	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Lead	0.0008	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Lithium	0.01516	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:18		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:31	U	LNM
Molybdenum	0.00259	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:18	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:18	U	JDB

Water (216024)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	12	mg/L	0.219	1	EPA 300.0	05/17/2018 6:24		GB
Fluoride	0.783	mg/L	0.083	1	EPA 300.0	05/17/2018 6:24	J	GB
Solids, Total Dissolved (TDS)	728	mg/L	2	1	SM 2540 C-2011	05/08/2018 14:00		JTD
Sulfate	214	mg/L	0.140	1:10	EPA 300.0	05/17/2018 7:58		GB

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AEP ANALYTICAL CHEMISTRY SERVICES
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Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
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AEP Sample ID : 216025 **Collected Date:** 05/02/2018 **By:** KM
Cust Sample ID: Equipment Blank **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (216025)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00419	mg/L	0.00093	1	EPA 6010B 1996	05/31/2018 5:33	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Barium	< 0.00015	mg/L	0.00015	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Boron	0.05525	mg/L	0.00028	1	EPA 6010B 1996	05/31/2018 5:33		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Calcium	< 0.0096	mg/L	0.0096	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Cobalt	< 0.00014	mg/L	0.00014	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Lithium	< 0.00013	mg/L	0.00013	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	05/17/2018 14:34	U	LNM
Molybdenum	0.00055	mg/L	0.00029	1	EPA 6010B 1996	05/31/2018 5:33	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	05/31/2018 5:33	U	JDB

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
5/31/2018	Antimony	216019.2	0.005019	0.8	0.8273685	103.4	0.8	0.8112554	101.4		0.2	JDB
5/31/2018	Antimony	216009.1	0.004033	0.8	0.8267759	103.3	0.8	0.7874176	98.4		0.1	JDB
5/31/2018	Antimony	215157.1	0.004033	0.8	0.8267759	103.3	0.8	0.8258387	103.2		0.4	JDB
5/31/2018	Arsenic	216019.2	<0.00105	0.8	0.8200254	102.5	0.8	0.8072418	100.9		0.2	JDB
5/31/2018	Arsenic	216009.1	0.001417	0.8	0.8260430	103.3	0.8	0.7852755	98.2		0.6	JDB
5/31/2018	Arsenic	215157.1	0.001417	0.8	0.8260430	103.3	0.8	0.8173489	102.2		0.9	JDB
5/31/2018	Barium	215157.1	<0.00015	0.2	0.2125247	106.3	0.2	0.2033549	101.7		0.6	JDB
5/31/2018	Barium	216019.2	<0.00015	0.2	0.2102812	105.1	0.2	0.1997377	99.9		0.1	JDB
5/31/2018	Barium	216009.1	<0.00015	0.2	0.2125247	106.3	0.2	0.1943424	97.2		1.6	JDB
5/31/2018	Beryllium	216019.2	<0.00002	0.2	0.2060517	103.0	0.2	0.2050819	102.5		0.5	JDB
5/31/2018	Beryllium	216009.1	<0.00002	0.2	0.2085850	104.3	0.2	0.2006993	100.3		0.3	JDB
5/31/2018	Beryllium	215157.1	<0.00002	0.2	0.2085850	104.3	0.2	0.2067083	103.4		0.2	JDB
5/30/2018	Boron	215129.1	0.005183	0.3	0.30363	101.2	0.3	0.3087853	102.9		0.3	JDB
5/31/2018	Boron	216019.2	0.044382	0.3	0.2990235	99.7	15	18.631447	124.2		3.9	JDB
5/31/2018	Cadmium	216019.2	<0.00007	0.2	0.2046035	102.3	0.2	0.1975905	98.8		0.3	JDB
5/31/2018	Cadmium	216009.1	<0.00007	0.2	0.2059064	103.0	0.2	0.1951314	97.6		0.4	JDB
5/31/2018	Cadmium	215157.1	<0.00007	0.2	0.2059064	103.0	0.2	0.2041354	102.1		0.5	JDB
5/30/2018	Calcium	216019.2	<0.48	1	1.0248191	102.5	50	59.200167	118.4		0.2	JDB
5/30/2018	Calcium	215129.1	0.052046	1	0.96387	96.4	1	0.93694	93.7		1.3	JDB
5/16/2018	Chloride			20	18.1	90.5						GB
5/16/2018	Chloride	216024	<0.219	20	18.3	91.5	50	66	132.0		0.0	GB
5/16/2018	Chloride		<0.219									GB
5/17/2018	Chloride		<0.219									GB
5/17/2018	Chloride	216024	<0.219	20	18.3	91.5	50	66	132.0		0.0	GB
5/17/2018	Chloride			20	18.1	90.5						GB
5/31/2018	Chromium	216019.2	<0.00023	0.4	0.4052233	101.3	0.4	0.4002418	100.1		0.6	JDB
5/31/2018	Chromium	216009.1	<0.00023	0.4	0.4088557	102.2	0.4	0.3885853	97.1		0.2	JDB
5/31/2018	Chromium	215157.1	<0.00023	0.4	0.4088557	102.2	0.4	0.4045946	101.1		0.1	JDB
5/31/2018	Cobalt	215157.1	<0.00014	0.2	0.2044290	102.2	0.2	0.2020274	101.0		0.0	JDB
5/31/2018	Cobalt	216009.1	<0.00014	0.2	0.2044290	102.2	0.2	0.192514	96.3		0.4	JDB
5/31/2018	Cobalt	216019.2	<0.00014	0.2	0.202216	101.1	0.2	0.198529	99.3		0.9	JDB
5/16/2018	Fluoride	216024	<0.083	10	11	110.0	20	25.92	129.6		0.0	GB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37591
Date Received: 05/03/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

5/16/2018	Fluoride		<0.083									GB
5/16/2018	Fluoride			10	11	110.0						GB
5/17/2018	Fluoride			10	11	110.0						GB
5/17/2018	Fluoride		<0.083									GB
5/17/2018	Fluoride	216024	<0.083	10	11	110.0	20	25.92	129.6		0.0	GB
5/31/2018	Lead	216009.1	<0.00068	1	1.0164545	101.6	1	0.9594413	95.9		0.3	JDB
5/31/2018	Lead	215157.1	<0.00068	1	1.0164545	101.6	1	1.0046001	100.5		0.2	JDB
5/31/2018	Lead	216019.2	<0.00068	1	1.0087892	100.9	1	0.9835240	98.4		0.3	JDB
5/31/2018	Lithium	216019.2	<0.00013	0.2	0.2062583	103.1	0.2	0.215069	107.5		0.4	JDB
5/31/2018	Lithium	216009.1	<0.00013	0.2	0.2059778	103.0	0.2	0.2166713	108.3		0.5	JDB
5/31/2018	Lithium	215157.1	<0.00013	0.2	0.2059778	103.0	0.2	0.2089146	104.5		0.3	JDB
5/17/2018	Mercury	216018.2	<0.00000	0.001	0.0008679	86.8	0.001	0.0009932	99.3		4.5	LNM
5/17/2018	Mercury	216008.1	<0.00000	0.001	0.00099	99.0	0.001	0.0009596	96.0		2.6	LNM
5/31/2018	Molybdenum	216019.2	0.000525	0.2	0.2015659	100.8	0.2	0.2012397	100.6		0.1	JDB
5/31/2018	Molybdenum	215157.1	0.000361	0.2	0.2031598	101.6	0.2	0.2014463	100.7		0.2	JDB
5/31/2018	Molybdenum	216009.1	0.000361	0.2	0.2031598	101.6	0.2	0.195156	97.6		0.3	JDB
5/31/2018	Selenium	216009.1	0.001072	2	2.0125011	100.6	2	1.9585120	97.9		0.3	JDB
5/31/2018	Selenium	215157.1	0.001072	2	2.0125011	100.6	2	2.0058802	100.3		0.8	JDB
5/31/2018	Selenium	216019.2	0.001851	2	2.0135684	100.7	2	1.9745820	98.7		0.2	JDB
5/7/2018	Solids, Total Dissolved (TDS)	216021	<2	101.67	106	104.3	2214	2178	98.4		1.7	LBH
5/8/2018	Solids, Total Dissolved (TDS)	216023	<2	101.67	106	104.3	2140	2124	99.3		0.8	JTD
5/17/2018	Sulfate		<0.140									GB
5/17/2018	Sulfate	216024	<0.140	20	18	90.0	50	46	92.0		8.4	GB
5/17/2018	Sulfate			20	18	90.0						GB
5/31/2018	Thallium	215157.1	0.001182	0.4	0.4102024	102.6	0.4	0.4039268	101.0		0.7	JDB
5/31/2018	Thallium	216019.2	0.000868	0.4	0.4064212	101.6	0.4	0.3913926	97.8		0.1	JDB
5/31/2018	Thallium	216009.1	0.001182	0.4	0.4102024	102.6	0.4	0.3745872	93.6		0.2	JDB

Code ***Code Description***

J Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).

U Analyte concentration below MDL.

Sandra G. Wallace
Laboratory Manager

12-Jul-18
Report Date

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

AT 5.4.18

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact:

Date:

For Lab Use Only:
COC/Order #: COC# 37591

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3: B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, TL	Field-filter 500 mL bottle, then pH<2, HNO3: dissolved Fe and Mn	1 L bottle, Cool, 0-6C: TDS, F, Cl, SO4	Three (six every 10th*) 1 L bottles, pH<2, HNO3: Ra-226, Ra-228				Sample Specific Notes:
MW-2D	5/2/2018	1035	G	GW	2		X		X					216017.1 - 216017.2
MW-3D	5/2/2018	940	G	GW	2		X		X					216018.1 - 216018.2
MW-4D	5/2/2018	920	G	GW	2		X		X					216019.1 - 216019.2
MW-5D	5/2/2018	1105	G	GW	2		X		X					216020.1 - 216020.2
MW-6D	5/2/2018	1010	G	GW	2		X		X					216021.1 - 216021.2
MW-12D	5/2/2018	1140	G	GW	2		X		X					216022.1 - 216022.2
MW-13D	5/2/2018	1130	G	GW	2		X		X					216023.1 - 216023.2
DUP	5/2/2018	940	G	GW	2		X		X					216024.1 - 216024.2
EQUIPMENT BLANK	5/2/2018	1215	G	W	1		X							216025
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by: [signature]	Company: EAGLE	Date/Time: 05/03/18 1323	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 5/3/18 1:35

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail Walk in (Shuttle)
Other	Other
	Tracking #

Client: Jill Parker
Received By: JTD
Received Date: 5/3/18
Open Date: 5/3/18

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read: 2 (Thermometer Serial #F04103)
Correction Factor: +1.2
Corrected Temp: 3.2

Project I.D. 37591

Were samples received on ice? (YES) NO

Did container arrive in good condition? (YES) NO

Was sample documentation received? (YES) NO

Was documentation filled out properly? (YES) NO

Were samples labeled properly? (YES) NO

Were correct containers used? (YES) NO

Were the pH's of samples appropriately checked? (YES) NO

Total number of sample containers: 17

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

Sample ID	Analysis	pH	Preservative Added / Lot #
MW-2D	Metals	<2	/
MW-3D			/
MW-4D			/
MW-5D			/
MW-6D			/
MW-12D			/
MW-13D			/
Dup			/
Equip Blank			/
			/
			/
			/
			/
			/
			/
			/
			/
			/
			/
			/

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216844
Cust Sample ID: MW-1D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216844)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00457	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 8:08	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 8:08	U	JDB
Barium	0.0181	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 8:08		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 8:08	U	JDB
Boron	1.2	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 8:08		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 8:08	U	JDB
Calcium	135	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:11		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 8:08	U	JDB
Cobalt	0.00036	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 8:08	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 8:08	U	JDB
Lithium	0.05481	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 8:08		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:19	U	LNM
Molybdenum	0.01073	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 8:08		JDB
Selenium	0.00311	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 8:08	J	JDB
Thallium	0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:11		JDB

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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216845
Cust Sample ID: MW-2D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216845)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00195	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 8:13	J	JDB
Arsenic	0.03461	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Barium	0.02917	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 8:13	U	JDB
Boron	10.1	mg/L	0.014	1:50	EPA 6010B 1996	07/10/2018 22:27		JDB
Cadmium	0.00044	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 8:13	J	JDB
Calcium	19.2	mg/L	0.0096	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Chromium	0.0014	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Cobalt	0.0003	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 8:13	J	JDB
Lead	0.00128	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 8:13	J	JDB
Lithium	0.00125	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Mercury	0.00004	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:22		LNM
Molybdenum	0.552	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Selenium	0.07231	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 8:13		JDB
Thallium	0.002	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:27		JDB

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216846
Cust Sample ID: MW-3D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216846)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 8:23	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 8:23	U	JDB
Barium	0.281	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 8:23		JDB
Beryllium	0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 8:23	J	JDB
Boron	0.952	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 8:23		JDB
Cadmium	0.00023	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 8:23	J	JDB
Calcium	129	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:33		JDB
Chromium	0.00264	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 8:23		JDB
Cobalt	0.00102	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 8:23	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 8:23	U	JDB
Lithium	0.01673	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 8:23		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:25	U	LNM
Molybdenum	0.00255	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 8:23	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 8:23	U	JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:33	U	JDB

Water (216846)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	13	mg/L	0.219	1	EPA 300.0	06/06/2018 10:43		GB
Fluoride	0.896	mg/L	0.083	1	EPA 300.0	06/06/2018 10:43	J	GB
Solids, Total Dissolved (TDS)	724	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	214	mg/L	0.140	1:10	EPA 300.0	06/06/2018 12:18		GB

502 North Allen Ave.
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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
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AEP Sample ID : 216847
Cust Sample ID: MW-4D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216847)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Barium	0.173	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 8:28		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Boron	1.27	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 8:28		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Calcium	164	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:38		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Cobalt	0.00128	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 8:28	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Lithium	0.0033	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 8:28		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:27	U	LNM
Molybdenum	0.00491	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 8:28	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 8:28	U	JDB
Thallium	0.00294	mg/L	0.00086	1	EPA 6010B 1996	07/11/2018 8:28		JDB

Water (216847)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	20	mg/L	0.219	1	EPA 300.0	06/06/2018 13:33		GB
Fluoride	0.4188	mg/L	0.083	1	EPA 300.0	06/06/2018 13:33	J	GB
Solids, Total Dissolved (TDS)	910	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	279	mg/L	0.140	1:10	EPA 300.0	06/06/2018 13:52		GB

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AEP Sample ID : 216848
Cust Sample ID: MW-5D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216848)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 8:34	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 8:34	U	JDB
Barium	0.139	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 8:34		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 8:34	U	JDB
Boron	0.468	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 8:34		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 8:34	U	JDB
Calcium	136	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:43		JDB
Chromium	0.00153	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 8:34		JDB
Cobalt	0.00131	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 8:34	J	JDB
Lead	0.00109	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 8:34	J	JDB
Lithium	0.01199	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 8:34		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:36	U	LNM
Molybdenum	< 0.00029	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 8:34	U	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 8:34	U	JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:43	U	JDB

Water (216848)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	24	mg/L	0.219	1	EPA 300.0	06/06/2018 14:11		GB
Fluoride	0.711	mg/L	0.083	1	EPA 300.0	06/06/2018 14:11	J	GB
Solids, Total Dissolved (TDS)	628	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	113	mg/L	0.140	1:10	EPA 300.0	06/06/2018 14:29		GB

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AEP Sample ID : 216849
Cust Sample ID: MW-6D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216849)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 8:39	U	JDB
Arsenic	0.00127	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 8:39	J	JDB
Barium	0.148	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 8:39		JDB
Beryllium	0.00029	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 8:39	J	JDB
Boron	3.35	mg/L	0.014	1:50	EPA 6010B 1996	07/10/2018 22:49		JDB
Cadmium	0.00057	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 8:39	J	JDB
Calcium	269	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:49	M4	JDB
Chromium	0.01265	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 8:39		JDB
Cobalt	0.00449	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 8:39	J	JDB
Lead	0.00644	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 8:39		JDB
Lithium	0.02463	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 8:39		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:52	U	LNM
Molybdenum	0.07477	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 8:39		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 8:39	U	JDB
Thallium	0.024	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:49		JDB

Water (216849)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	32	mg/L	0.219	1	EPA 300.0	06/06/2018 14:48		GB
Fluoride	0.9218	mg/L	0.083	1	EPA 300.0	06/06/2018 11:48	J	GB
Solids, Total Dissolved (TDS)	1090	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	401	mg/L	0.140	1:10	EPA 300.0	06/06/2018 15:07		GB

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AEP Sample ID : 216850
Cust Sample ID: MW-7D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216850)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.0041	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 9:17	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 9:17	U	JDB
Barium	0.03081	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 9:17		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 9:17	U	JDB
Boron	0.84	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 9:17		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 9:17	U	JDB
Calcium	207	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:54		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 9:17	U	JDB
Cobalt	0.00056	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 9:17	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 9:17	U	JDB
Lithium	0.173	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 9:17		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:55	U	LNM
Molybdenum	0.01325	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 9:17		JDB
Selenium	0.00226	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 9:17	J	JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:54	U	JDB

Water (216850)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	511	mg/L	0.219	1:10	EPA 300.0	06/06/2018 15:45		GB
Fluoride	3.456	mg/L	0.083	1	EPA 300.0	06/06/2018 15:26		GB
Solids, Total Dissolved (TDS)	5912	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	2973	mg/L	0.140	1:100	EPA 300.0	06/25/2018 14:52		GB

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AEP Sample ID : 216851
Cust Sample ID: MW-8D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216851)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00283	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 9:22	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 9:22	U	JDB
Barium	4.11	mg/L	0.0075	1:50	EPA 6010B 1996	07/10/2018 22:59		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 9:22	U	JDB
Boron	1.31	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 9:22		JDB
Cadmium	0.00105	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 9:22		JDB
Calcium	353	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 22:59		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 9:22	U	JDB
Cobalt	0.00206	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 9:22	J	JDB
Lead	0.00087	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 9:22	J	JDB
Lithium	1.09	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 9:22		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 11:57	U	LNM
Molybdenum	0.00032	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 9:22	J	JDB
Selenium	0.00196	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 9:22	J	JDB
Thallium	0.025	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 22:59		JDB

Water (216851)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	11942	mg/L	0.219	1:100	EPA 300.0	06/06/2018 17:38		GB
Fluoride	3.314	mg/L	0.083	1:10	EPA 300.0	06/06/2018 17:19		GB
Solids, Total Dissolved (TDS)	384	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	47	mg/L	0.140	1	EPA 300.0	06/06/2018 16:04		GB

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AEP Sample ID : 216852
Cust Sample ID: MW-10D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216852)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00247	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 9:27	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 9:27	U	JDB
Barium	0.102	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 9:27		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 9:27	U	JDB
Boron	1.15	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 9:27		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 9:27	U	JDB
Calcium	54.9	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:05		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 9:27	U	JDB
Cobalt	0.00061	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 9:27	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 9:27	U	JDB
Lithium	0.451	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 9:27		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:00	U	LNM
Molybdenum	0.01972	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 9:27		JDB
Selenium	0.00702	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 9:27		JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 23:05	U	JDB

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AEP Sample ID : 216853
Cust Sample ID: MW-11D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216853)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 9:44	U	JDB
Arsenic	0.00177	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 9:44	J	JDB
Barium	0.05576	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 9:44		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 9:44	U	JDB
Boron	0.641	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 9:44		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 9:44	U	JDB
Calcium	114	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:10		JDB
Chromium	0.0021	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 9:44		JDB
Cobalt	0.00043	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 9:44	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 9:44	U	JDB
Lithium	0.03979	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 9:44		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:08	U	LNM
Molybdenum	0.01214	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 9:44		JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 9:44	U	JDB
Thallium	0.0018	mg/L	0.00086	1	EPA 6010B 1996	07/11/2018 9:44	J	JDB

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AEP Sample ID : 216854
Cust Sample ID: MW-12D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216854)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 9:49	U	JDB
Arsenic	0.00124	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 9:49	J	JDB
Barium	0.07775	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 9:49		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 9:49	U	JDB
Boron	8.35	mg/L	0.014	1:50	EPA 6010B 1996	07/10/2018 23:16		JDB
Cadmium	0.00025	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 9:49	J	JDB
Calcium	89.9	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:16		JDB
Chromium	0.00274	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 9:49		JDB
Cobalt	0.00149	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 9:49	J	JDB
Lead	0.00304	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 9:49	J	JDB
Lithium	0.00608	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 9:49		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:11	U	LNM
Molybdenum	0.667	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 9:49		JDB
Selenium	0.00388	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 9:49	J	JDB
Thallium	0.0022	mg/L	0.00086	1	EPA 6010B 1996	07/11/2018 9:49		JDB

Water (216854)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	91	mg/L	0.219	1	EPA 300.0	06/06/2018 17:57		GB
Fluoride	2.379	mg/L	0.083	1	EPA 300.0	06/06/2018 17:57		GB
Solids, Total Dissolved (TDS)	1088	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	542	mg/L	0.140	1:10	EPA 300.0	06/06/2018 18:34		GB

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Analysis Report

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 216855
Cust Sample ID: MW-13D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216855)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 9:55	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 9:55	U	JDB
Barium	0.07607	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 9:55		JDB
Beryllium	0.00003	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 9:55	J	JDB
Boron	0.864	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 9:55		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 9:55	U	JDB
Calcium	171	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:32		JDB
Chromium	0.00148	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 9:55		JDB
Cobalt	0.00437	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 9:55	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 9:55	U	JDB
Lithium	0.03287	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 9:55		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:14	U	LNM
Molybdenum	0.01307	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 9:55		JDB
Selenium	0.01196	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 9:55		JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 23:32	U	JDB

Water (216855)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	6	mg/L	0.219	1	EPA 300.0	06/06/2018 19:12		GB
Fluoride	0.4361	mg/L	0.083	1	EPA 300.0	06/06/2018 19:12	J	GB
Solids, Total Dissolved (TDS)	1068	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	343	mg/L	0.140	1:10	EPA 300.0	06/06/2018 19:49		GB

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AEP Sample ID : 216856
Cust Sample ID: MW-14
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216856)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 10:00	J	JDB
Arsenic	0.00115	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 10:00	J	JDB
Barium	0.157	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 10:00		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 10:00	U	JDB
Boron	1.47	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 10:00		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 10:00	U	JDB
Calcium	77.1	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:37		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 10:00	U	JDB
Cobalt	0.00329	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 10:00	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 10:00	U	JDB
Lithium	0.361	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 10:00		JDB
Mercury	0.000009	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:16	J	LNM
Molybdenum	0.02067	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 10:00		JDB
Selenium	0.00551	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 10:00		JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 23:37	U	JDB

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AEP Sample ID : 216857
Cust Sample ID: MW-15
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216857)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 10:05	U	JDB
Arsenic	0.0039	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 10:05	J	JDB
Barium	0.256	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Beryllium	0.00125	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Boron	8.76	mg/L	0.014	1:50	EPA 6010B 1996	07/10/2018 23:42		JDB
Cadmium	0.00038	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 10:05	J	JDB
Calcium	105	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:42		JDB
Chromium	0.00661	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Cobalt	0.00261	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 10:05	J	JDB
Lead	0.00518	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Lithium	0.01161	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Mercury	0.000024	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:25	J	LNM
Molybdenum	0.551	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Selenium	0.00537	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 10:05		JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 23:42	U	JDB

Water (216857)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	33	mg/L	0.219	1	EPA 300.0	06/06/2018 20:27		GB
Fluoride	2.331	mg/L	0.083	1	EPA 300.0	06/06/2018 20:27		GB
Solids, Total Dissolved (TDS)	1128	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	549	mg/L	0.140	1:10	EPA 300.0	06/06/2018 21:05		GB

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AEP Sample ID : 216858
Cust Sample ID: MW-17
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/30/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Metals (216858)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00161	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 10:21	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 10:21	U	JDB
Barium	0.04012	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 10:21		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 10:21	U	JDB
Boron	0.702	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 10:21		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 10:21	U	JDB
Calcium	191	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:48		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 10:21	U	JDB
Cobalt	0.00031	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 10:21	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 10:21	U	JDB
Lithium	0.01139	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 10:21		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:33	U	LNM
Molybdenum	0.00838	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 10:21		JDB
Selenium	0.0267	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 10:21		JDB
Thallium	< 0.043	mg/L	0.043	1:50	EPA 6010B 1996	07/10/2018 23:48	U	JDB

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AEP Sample ID : 216859 **Collected Date:** 05/30/2018 **By:** KM
Cust Sample ID: Duplicate Landfill **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (216859)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	< 0.00093	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Barium	0.178	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 10:27		JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Boron	1.26	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 10:27		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Calcium	161	mg/L	0.48	1:50	EPA 6010B 1996	07/10/2018 23:53	M4	JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Cobalt	0.0011	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 10:27	J	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Lithium	0.00334	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 10:27		JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:49	U	LNM
Molybdenum	0.00483	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 10:27	J	JDB
Selenium	< 0.00099	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 10:27	U	JDB
Thallium	0.00289	mg/L	0.00086	1	EPA 6010B 1996	07/11/2018 10:27		JDB

Water (216859)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	21	mg/L	0.219	1	EPA 300.0	06/06/2018 21:42	M6	GB
Fluoride	0.411	mg/L	0.083	1	EPA 300.0	06/06/2018 21:42	J	GB
Solids, Total Dissolved (TDS)	916	mg/L	2	1	SM 2540 C-2011	06/06/2018 9:00		LBH
Sulfate	292	mg/L	0.140	1:10	EPA 300.0	06/25/2018 15:30		GB

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AEP Sample ID : 216860 **Collected Date:** 05/30/2018 **By:** KM
Cust Sample ID: Equipment Blank Landfill **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (216860)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Antimony	0.00115	mg/L	0.00093	1	EPA 6010B 1996	07/11/2018 10:54	J	JDB
Arsenic	< 0.00105	mg/L	0.00105	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Barium	< 0.00015	mg/L	0.00015	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Beryllium	< 0.00002	mg/L	0.00002	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Boron	0.05404	mg/L	0.00028	1	EPA 6010B 1996	07/11/2018 10:54		JDB
Cadmium	< 0.00007	mg/L	0.00007	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Calcium	0.0106	mg/L	0.0096	1	EPA 6010B 1996	07/11/2018 10:54		JDB
Chromium	< 0.00023	mg/L	0.00023	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Cobalt	< 0.00014	mg/L	0.00014	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Lead	< 0.00068	mg/L	0.00068	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Lithium	< 0.00013	mg/L	0.00013	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	06/06/2018 12:52	U	LNM
Molybdenum	< 0.00029	mg/L	0.00029	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB
Selenium	0.00193	mg/L	0.00099	1	EPA 6010B 1996	07/11/2018 10:54	J	JDB
Thallium	< 0.00086	mg/L	0.00086	1	EPA 6010B 1996	07/11/2018 10:54	U	JDB

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Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
7/11/2018	Antimony	216829.1	0.002111	0.8	0.7743853	96.8	0.8	0.7694967	96.2		1.8	JDB
7/11/2018	Antimony	216607.1	0.011666	0.8	0.80691	100.9	0.8	0.770316	96.3		1.2	JDB
7/11/2018	Antimony	216839.1	<0.00093	0.8	0.7840294	98.0	0.8	0.7474474	93.4		0.5	JDB
7/11/2018	Antimony	216849.1	<0.00093	0.8	0.7840294	98.0	0.8	0.7162960	89.5		1.2	JDB
7/11/2018	Antimony	216859.1	<0.00093	0.8	0.7863861	98.3	0.8	0.7762676	97.0		0.2	JDB
7/11/2018	Antimony	217438.1	<0.00093	0.8	0.7863861	98.3	0.8	0.7518081	94.0		1.2	JDB
7/11/2018	Antimony	217448.1	<0.00093	0.8	0.7833788	97.9	0.8	0.7646954	95.6		1.2	JDB
7/11/2018	Arsenic	216859.1	<0.00105	0.8	0.7609157	95.1	0.8	0.7596461	95.0		1.1	JDB
7/11/2018	Arsenic	216607.1	<0.00105	0.8	0.82209	102.8	0.8	0.7777993	97.2		1.9	JDB
7/11/2018	Arsenic	216829.1	<0.00105	0.8	0.782387	97.8	0.8	0.7688641	96.1		2.1	JDB
7/11/2018	Arsenic	217448.1	<0.00105	0.8	0.7674074	95.9	0.8	0.7729410	96.6		0.4	JDB
7/11/2018	Arsenic	216849.1	<0.00105	0.8	0.7814274	97.7	0.8	0.7282816	91.0		0.2	JDB
7/11/2018	Arsenic	217438.1	<0.00105	0.8	0.7609157	95.1	0.8	0.7475921	93.4		1.0	JDB
7/11/2018	Arsenic	216839.1	<0.00105	0.8	0.7814274	97.7	0.8	0.7482348	93.5		0.5	JDB
7/11/2018	Barium	216829.1	<0.00015	0.2	0.1947964	97.4	0.2	0.1845827	92.3		2.2	JDB
7/11/2018	Barium	216607.1	<0.00015	0.2	0.20727	103.6	0.2	0.1924270	96.2		0.3	JDB
7/11/2018	Barium	217448.1	<0.00015	0.2	0.1989253	99.5	0.2	0.185726	92.9		0.7	JDB
7/11/2018	Barium	217438.1	<0.00015	0.2	0.1993587	99.7	0.2	0.174301	87.2		1.0	JDB
7/11/2018	Barium	216859.1	<0.00015	0.2	0.1993587	99.7	0.2	0.18852	94.3		0.9	JDB
7/11/2018	Barium	216849.1	<0.00015	0.2	0.1970746	98.5	0.2	0.1860327	93.0		1.0	JDB
7/11/2018	Barium	216839.1	<0.00015	0.2	0.1970746	98.5	0.2	0.1812223	90.6		0.6	JDB
7/11/2018	Beryllium	216607.1	<0.00002	0.2	0.20674	103.4	0.2	0.1968008	98.4		1.3	JDB
7/11/2018	Beryllium	217448.1	<0.00002	0.2	0.1940919	97.0	0.2	0.1934906	96.7		1.2	JDB
7/11/2018	Beryllium	216829.1	<0.00002	0.2	0.1942471	97.1	0.2	0.1962412	98.1		1.8	JDB
7/11/2018	Beryllium	216839.1	<0.00002	0.2	0.1940796	97.0	0.2	0.1927375	96.4		0.3	JDB
7/11/2018	Beryllium	216849.1	<0.00002	0.2	0.1940796	97.0	0.2	0.1873301	93.7		0.2	JDB
7/11/2018	Beryllium	217438.1	<0.00002	0.2	0.1940843	97.0	0.2	0.1922127	96.1		1.5	JDB
7/11/2018	Beryllium	216859.1	<0.00002	0.2	0.1940843	97.0	0.2	0.1945641	97.3		0.8	JDB
7/10/2018	Boron	216849.1	0.111559	0.3	0.2377648	79.3	0.3	0.2329567	77.7		0.8	JDB
7/11/2018	Boron	217448.1	0.068451	0.3	0.2803750	93.5	0.3	0.2338	77.9		0.1	JDB
7/11/2018	Boron	216859.1	0.044220	0.3	0.2766036	92.2	0.3	0.2715733	90.5		1.1	JDB
7/11/2018	Boron	216597.2	0.002614	0.3	0.29955	99.9	0.3	0.287187	95.7		2.6	JDB

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7/11/2018	Cadmium	216849.1	<0.00007	0.2	0.1944529	97.2	0.2	0.1806458	90.3		0.3	JDB
7/11/2018	Cadmium	216607.1	<0.00007	0.2	0.20786	103.9	0.2	0.1958449	97.9		1.2	JDB
7/11/2018	Cadmium	216839.1	<0.00007	0.2	0.1944529	97.2	0.2	0.1925503	96.3		0.4	JDB
7/11/2018	Cadmium	216859.1	<0.00007	0.2	0.1929989	96.5	0.2	0.188907	94.5		0.9	JDB
7/11/2018	Cadmium	217438.1	<0.00007	0.2	0.1929989	96.5	0.2	0.1909662	95.5		1.5	JDB
7/11/2018	Cadmium	217448.1	<0.00007	0.2	0.192313	96.2	0.2	0.1923029	96.2		1.2	JDB
7/11/2018	Cadmium	216829.1	<0.00007	0.2	0.1957450	97.9	0.2	0.1938799	96.9		1.9	JDB
7/10/2018	Calcium	216849.1	<0.48	1	0.9410564	94.1					0.3	JDB
7/10/2018	Calcium	216859.1	<0.48	1	0.9037201	90.4					1.1	JDB
7/11/2018	Calcium	217448.1	<0.48	1	0.9132641	91.3					0.4	JDB
7/11/2018	Calcium	216597.2	<0.0096	1	1.01517	101.5	1	0.940655	94.1		2.2	JDB
6/6/2018	Chloride						50	48	96.0		8.3	GB
6/6/2018	Chloride		<0.219									GB
6/6/2018	Chloride	216846		20	18.1	90.5	50	68	136.0		0.0	GB
6/6/2018	Chloride	216859	<0.219	20	18.4	92.0	50	73	146.0		0.0	GB
6/6/2018	Chloride						50	45	90.0		0.0	GB
7/11/2018	Chromium	217448.1	<0.00023	0.4	0.3790240	94.8	0.4	0.3807842	95.2		1.2	JDB
7/11/2018	Chromium	216607.1	<0.00023	0.4	0.40533	101.3	0.4	0.3840149	96.0		1.3	JDB
7/11/2018	Chromium	216829.1	<0.00023	0.4	0.3823525	95.6	0.4	0.3856683	96.4		1.9	JDB
7/11/2018	Chromium	216839.1	<0.00023	0.4	0.3813157	95.3	0.4	0.3769947	94.2		0.4	JDB
7/11/2018	Chromium	216849.1	<0.00023	0.4	0.3813157	95.3	0.4	0.3663764	91.6		0.1	JDB
7/11/2018	Chromium	217438.1	<0.00023	0.4	0.3798332	95.0	0.4	0.3749093	93.7		1.5	JDB
7/11/2018	Chromium	216859.1	<0.00023	0.4	0.3798332	95.0	0.4	0.3793229	94.8		0.8	JDB
7/11/2018	Cobalt	216829.1	<0.00014	0.2	0.1923129	96.2	0.2	0.1914518	95.7		2.1	JDB
7/11/2018	Cobalt	217438.1	<0.00014	0.2	0.1937297	96.9	0.2	0.1871922	93.6		1.3	JDB
7/11/2018	Cobalt	216607.1	<0.00014	0.2	0.20521	102.6	0.2	0.1938551	96.9		1.6	JDB
7/11/2018	Cobalt	217448.1	<0.00014	0.2	0.1928593	96.4	0.2	0.1864234	93.2		1.3	JDB
7/11/2018	Cobalt	216859.1	<0.00014	0.2	0.1937297	96.9	0.2	0.1911424	95.6		0.9	JDB
7/11/2018	Cobalt	216849.1	<0.00014	0.2	0.1930186	96.5	0.2	0.1832919	91.6		0.2	JDB
7/11/2018	Cobalt	216839.1	<0.00014	0.2	0.1930186	96.5	0.2	0.1875445	93.8		0.5	JDB
6/6/2018	Fluoride	216828	<0.083	10	10	100.0	10	10	100.0		9.4	GB
6/6/2018	Fluoride		<0.083									GB
6/6/2018	Fluoride			10	11	110.0						GB
6/6/2018	Fluoride			10	10	100.0						GB
6/6/2018	Fluoride	216846	<0.083	10	11	110.0	10	9.8	98.0		0.0	GB
7/11/2018	Lead	216839.1	<0.00068	1	0.9682329	96.8	1	0.9390272	93.9		0.4	JDB

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

7/11/2018	Lead	216829.1	<0.00068	1	0.9724599	97.2	1	0.9687459	96.9		1.9	JDB
7/11/2018	Lead	216849.1	<0.00068	1	0.9682329	96.8	1	0.9115634	91.2		0.5	JDB
7/11/2018	Lead	216859.1	<0.00068	1	0.9628089	96.3	1	0.9529827	95.3		0.9	JDB
7/11/2018	Lead	217438.1	<0.00068	1	0.9628089	96.3	1	0.9349115	93.5		1.6	JDB
7/11/2018	Lead	217448.1	<0.00068	1	0.9668009	96.7	1	0.947151	94.7		1.1	JDB
7/11/2018	Lead	216607.1	<0.00068	1	1.0379	103.8	1	0.9737756	97.4		1.3	JDB
7/11/2018	Lithium	216849.1	<0.00013	0.2	0.2006665	100.3	0.2	0.20681	103.4		0.4	JDB
7/11/2018	Lithium	216607.1	<0.00013	0.2	0.20529	102.6	0.2	0.2014402	100.7		1.3	JDB
7/11/2018	Lithium	216839.1	<0.00013	0.2	0.2006665	100.3	0.2	0.2114136	105.7		0.1	JDB
7/11/2018	Lithium	216859.1	<0.00013	0.2	0.2031312	101.6	0.2	0.2094512	104.7		0.3	JDB
7/11/2018	Lithium	217438.1	<0.00013	0.2	0.2031312	101.6	0.2	0.2139790	107.0		1.2	JDB
7/11/2018	Lithium	217448.1	<0.00013	0.2	0.2009675	100.5	0.2	0.2102503	105.1		0.3	JDB
7/11/2018	Lithium	216829.1	<0.00013	0.2	0.1975821	98.8	0.2	0.2088078	104.4		1.9	JDB
6/6/2018	Mercury	216858.1	<0.00000	0.001	0.0009016	90.2	0.001	0.0008205	82.1		4.9	LNM
6/6/2018	Mercury	216838.1	<0.00000	0.001	0.00094	94.0	0.001	0.0008853	88.5		0.3	LNM
6/6/2018	Mercury	216848.1	<0.00000	0.001	0.000875	87.5	0.001	0.0008819	88.2		15.3	LNM
6/6/2018	Mercury	216828.1	<0.00000	0.001	0.00094	94.0	0.001	0.0008283	82.8		2.2	LNM
7/11/2018	Molybdenum	216849.1	<0.00029	0.2	0.1905412	95.3	0.2	0.1843829	92.2		0.5	JDB
7/11/2018	Molybdenum	216607.1	<0.00029	0.2	0.20379	101.9	0.2	0.1916946	95.8		1.0	JDB
7/11/2018	Molybdenum	216839.1	<0.00029	0.2	0.1905412	95.3	0.2	0.1867393	93.4		1.2	JDB
7/11/2018	Molybdenum	216859.1	<0.00029	0.2	0.1906861	95.3	0.2	0.1931350	96.6		1.0	JDB
7/11/2018	Molybdenum	217438.1	<0.00029	0.2	0.1906861	95.3	0.2	0.1700057	85.0		1.0	JDB
7/11/2018	Molybdenum	217448.1	<0.00029	0.2	0.1895818	94.8	0.2	0.1953099	97.7		1.0	JDB
7/11/2018	Molybdenum	216829.1	<0.00029	0.2	0.1908355	95.4	0.2	0.1943824	97.2		1.9	JDB
7/11/2018	Selenium	217448.1	<0.00099	2	1.9079876	95.4	2	1.8855788	94.3		1.5	JDB
7/11/2018	Selenium	216607.1	0.001565	2	1.98493	99.2	2	1.8985007	94.9		1.6	JDB
7/11/2018	Selenium	217438.1	<0.00099	2	1.9186359	95.9	2	1.6210683	81.1		4.8	JDB
7/11/2018	Selenium	216829.1	0.001256	2	1.8985201	94.9	2	1.8805748	94.0		1.8	JDB
7/11/2018	Selenium	216839.1	<0.00099	2	1.9077373	95.4	2	1.8568667	92.8		0.2	JDB
7/11/2018	Selenium	216849.1	<0.00099	2	1.9077373	95.4	2	1.8317404	91.6		0.8	JDB
7/11/2018	Selenium	216859.1	<0.00099	2	1.9186359	95.9	2	1.8739280	93.7		0.8	JDB
6/6/2018	Solids, Total Dissolved (TDS)	216859	<2	99.33	106	106.7	2152	2114	98.2		0.7	LBH
6/6/2018	Sulfate		<0.140									GB
6/6/2018	Sulfate			20	18	90.0						GB
6/6/2018	Sulfate	216846		20	18	90.0	50	52	104.0		0.0	GB
6/25/2018	Sulfate			20	17.3	86.5						GB

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

Report ID : 37763
Date Received: 06/01/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

6/25/2018	Sulfate		<0.140									GB
6/25/2018	Sulfate	216859		20	17.2	86.0	50	51	102.0		0.3	GB
7/10/2018	Thallium	216607.1	<0.043	0.4	0.41188	103.0	0.4	0.3833643	95.8		0.6	JDB
7/10/2018	Thallium	216829.1	<0.043	0.4	0.385064	96.3	0.4	0.3749285	93.7		1.4	JDB
7/10/2018	Thallium	216849.1	<0.043	0.4	0.3845709	96.1	0.4	0.3579218	89.5		0.1	JDB
7/11/2018	Thallium	216859.1	<0.00086	0.4	0.386014	96.5	0.4	0.3752547	93.8		1.1	JDB
7/11/2018	Thallium	217438.1	<0.00086	0.4	0.386014	96.5	0.4	0.359684	89.9		1.6	JDB
7/11/2018	Thallium	217448.1	<0.043	0.4	0.386145	96.5	0.4	0.3536909	88.4		1.0	JDB
7/11/2018	Thallium	216839.1	<0.00086	0.4	0.3845709	96.1	0.4	0.3594548	89.9		0.1	JDB

Code	***Code Description***
J	Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).
M4	The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The associated blank spike recovery was acceptable.
M6	Matrix spike recovery was high.
U	Analyte concentration below MDL.

Sandra D. Wallace
Laboratory Manager

13-Jul-18
Report Date

6-1-18
MB

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)

Need results by July 18, 2018

Site Contact:

Date:

For Lab Use Only:
COC/Order #: COC# 37763

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3 — B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, TL	Field-filter 500 mL bottle, then pH<2, HNO3 — dissolved Fe and Mn	1 L bottle, Cool, 0-6C — TDS, F, Cl, SO4	Three (six every 10th*) 1 L bottles, pH<2, HNO3 — Ra-226, Ra-228				Sample Specific Notes:
MW-1D	5/30/2018	1312	G	GW	1		X							216844
MW-2D	5/30/2018	1342	G	GW	1		X							216845
MW-3D	5/30/2018	1422	G	GW	2		X		X					216846.1 - 216846.2
MW-4D	5/30/2018	1437	G	GW	2		X		X					216847.1 - 216847.2
MW-5D	5/30/2018	1326	G	GW	2		X		X					216848.1 - 216848.2
MW-6D	5/30/2018	1409	G	GW	2		X		X					216849.1 - 216849.2
MW-7D	5/30/2018	1451	G	GW	2		X		X					216850.1 - 216850.2
MW-8D	5/30/2018	1512	G	GW	2		X		X					216851.1 - 216851.2
MW-10D	5/30/2018	1137	G	GW	1		X							216852
MW-11D	5/30/2018	1200	G	GW	1		X							216853
MW-12D	5/30/2018	1223	G	GW	2		X		X					216854.1 - 216854.2
MW-13D	5/30/2018	1242	G	GW	2		X		X					216855.1 - 216855.2
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

****Need results by July 18, 2018***

Relinquished by: [signature]	Company: EAGLE	Date/Time: 06/01/18 1008	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 6/1/18 1009

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
Need results by July 18, 2018

Site Contact: | Date:

For Lab Use Only:
COC/Order #: COC#37763

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3 — B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, TL	Field-filter 500 mL bottle, then pH<2, HNO3 — dissolved Fe and Mn	1 L bottle, Cool, 0-6C — TDS, F, Cl, SO4	Three (six every 10th*) 1 L bottles, pH<2, HNO3 — Ra-226, Ra-228				Sample Specific Notes:
MW-14	5/30/2018	1258	G	GW	1		X							216856
MW-15	5/30/2018	1357	G	GW	2		X		X					216857.1-216857.2
MW-17	5/30/2018	1417	G	GW	1		X							216858
Duplicate Landfill	5/30/2018	1437	G	GW	2		X		X					216859.1-216859.2
Equipment Blank Landfill	5/30/2018	1549	G	W	1		X							216860
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

****Need results by July 18, 2018***

Relinquished by: [signature]	Company: EAGLE	Date/Time: 06/01/18 1008	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 6/1/18 1009

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail (Walk in) Shuttle
Other	Other
	Tracking #

Client NE
Received By BAr
Received Date 6/11/19
Open Date

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read 3.5°C
Thermometer Serial #F04103
Correction Factor +1.2°C
Corrected Temp 4.7°C

Project I.D. 37763

Were samples received on ice? (YES) NO

Did container arrive in good condition? (YES) NO

Was sample documentation received? (YES) NO

Was documentation filled out properly? (YES) NO

Were samples labeled properly? (YES) NO

Were correct containers used? (YES) NO

Were the pH's of samples appropriately checked? (YES) NO metals pH: <2

Total number of sample containers 27

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 38529
Date Received: 10/17/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 219921
Cust Sample ID: MW-15
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 10/15/2018
Location: Northeastern Power Plant

By: KM
Matrix: Water

Water (219921)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Fluoride	2.27	mg/L	0.083	1	EPA 300.0	10/25/2018 9:17		GB

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
10/25/2018	Fluoride	220179	<0.083	10	10	100.0	10	10.4	104.0		0.0	GB
10/25/2018	Fluoride		<0.083									GB
10/25/2018	Fluoride			10	10.2	102.0						GB

Sandra D. Wallace
Laboratory Manager

30-Oct-18
Report Date

Chain of Custody Record

Program: CCR Fluoride Only

10/17/18

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR

Contact Name: Jill Parker-Witt

Contact Phone: 318-673-3816

Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)

~~C= Routine (28 days for Monitoring Wells)~~

RUSH

Site Contact:

Date:

For Lab Use Only:

COC/Order #: COC# 38529

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	500 mL bottle, pH<2, HNO3 (Mercury)	Field-filter 500 mL bottle, then pH<2, HNO3 (dissolved Fe and Mn)	1 L bottle, Cool, 0-6C (Fluoride)	Three (six every 10th*) 1 L bottles, pH<2, HNO3 (Ra-226, Ra-228)				Sample Specific Notes:
MW-15	10/15/2018	1240	G	GW	1				X					219921
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

* *Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

****RUSH - 14 day turnaround - RUSH****

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	10/17/18 12:02		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			[signature]	10/17/18 12:03

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail (Walk in) Shuttle
Other	Other
	Tracking #

Client Jill Parker - WITT
Received By SHD
Received Date 10/17/18
Open Date

Sample Matrix: DGA PCB Oil Water Oil Soil
Solid Liquid Other

Container Temp Read 5 (Thermometer Serial #F04103)
Correction Factor +1.2
Corrected Temp 6.2

Project I.D. 38529

Were samples received on ice? YES (NO)

Did container arrive in good condition?	(YES)	NO
Was sample documentation received?	(YES)	NO
Was documentation filled out properly?	(YES)	NO
Were samples labeled properly?	(YES)	NO
Were correct containers used?	(YES)	NO
Were the pH's of samples appropriately checked?	YES	(NO) N/A

Total number of sample containers 1

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 38595
Date Received: 10/24/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 220156 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: MW-3D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220156)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	14.89	mg/L	0.219	1	EPA 300.0	10/26/2018 10:52		GB
Fluoride	1.09	mg/L	0.083	1	EPA 300.0	10/26/2018 10:52		GB
Solids, Total Dissolved (TDS)	702	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	210.57	mg/L	0.140	1:10	EPA 300.0	10/26/2018 11:11		GB

AEP Sample ID : 220157 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: MW-6D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220157)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	31.68	mg/L	0.219	1	EPA 300.0	10/26/2018 11:30		GB
Fluoride	1.28	mg/L	0.083	1	EPA 300.0	10/26/2018 11:30		GB
Solids, Total Dissolved (TDS)	1152	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	471.81	mg/L	0.140	1:10	EPA 300.0	10/26/2018 11:49		GB

AEP Sample ID : 220158 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: MW-7D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220158)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	568.00	mg/L	0.219	1:10	EPA 300.0	10/26/2018 12:27		GB
Fluoride	0.9527	mg/L	0.083	50	EPA 300.0	10/26/2018 12:08	J	GB
Solids, Total Dissolved (TDS)	5844	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	1374.80	mg/L	0.140	1:50	EPA 300.0	10/26/2018 19:21		GB

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 38595
Date Received: 10/24/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 220159 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: MW-8D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220159)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	11680.46	mg/L	0.219	1:100	EPA 300.0	10/26/2018 14:20		GB
Fluoride	< 0.083	mg/L	0.083	1	EPA 300.0	10/26/2018 12:46	U	GB
Solids, Total Dissolved (TDS)	20896	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	48.41	mg/L	0.140	1	EPA 300.0	10/26/2018 12:46		GB

AEP Sample ID : 220160 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: MW-9D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220160)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	106	mg/L	0.219	1	EPA 300.0	10/26/2018 14:38		GB
Fluoride	0.600	mg/L	0.083	1	EPA 300.0	10/26/2018 14:38	J	GB
Solids, Total Dissolved (TDS)	1258	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	519.42	mg/L	0.140	1:100	EPA 300.0	10/26/2018 14:57		GB

AEP Sample ID : 220161 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: MW-15 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220161)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	46.81	mg/L	0.219	1	EPA 300.0	10/26/2018 15:16		GB
Fluoride	2.17	mg/L	0.083	1	EPA 300.0	10/26/2018 15:16		GB
Solids, Total Dissolved (TDS)	1082	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	549.46	mg/L	0.140	1:10	EPA 300.0	10/26/2018 15:35		GB

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 38595
Date Received: 10/24/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 220162 **Collected Date:** 10/22/2018 **By:** KM
Cust Sample ID: Duplicate - Landfill **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Water (220162)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Chloride	16.36	mg/L	0.219	1	EPA 300.0	10/26/2018 16:13		GB
Fluoride	1.13	mg/L	0.083	10	EPA 300.0	10/26/2018 16:13		GB
Solids, Total Dissolved (TDS)	722	mg/L	2	1	SM 2540 C-2011	10/26/2018 15:30		JTD
Sulfate	241.48	mg/L	0.140	1:10	EPA 300.0	10/26/2018 17:47		GB

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
10/26/2018	Chloride	220162.1	<0.219	20	22.8	114.0	20	21	105.0		11.5	GB
10/26/2018	Chloride		<0.219									GB
10/26/2018	Chloride			20	22.4	112.0						GB
10/26/2018	Fluoride	220162.1	<0.083	10	10.58	105.8	10	11.5	115.0		1.8	GB
10/26/2018	Fluoride		<0.083									GB
10/26/2018	Fluoride			10	11.03	110.3						GB
10/26/2018	Solids, Total Dissolved (TDS)	220156.1	<2	99.33	106	106.7	2802	2810	100.3		0.3	JTD
10/26/2018	Sulfate	220162.1	<0.140	20	18.8	94.0	50	62.2	124.4		2.2	GB
10/26/2018	Sulfate		<0.140									GB
10/26/2018	Sulfate			20	18.6	93.0						GB

Code ***Code Description***

J Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).

U Analyte concentration below MDL.

Sandra D. Wallace
Laboratory Manager

07-Nov-18
Report Date

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

SA 10/25/18

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport, LA 71101
Contacts: ***Jonathan Barnhill (318-673-3803)***
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact:
Date:

For Lab Use Only:
COC/Order #: COC# 38595

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	Mercury (500 mL bottle, pH<2, HNO3)	dissolved Fe and Mn (Field-filter 500 mL bottle, then pH<2, HNO3)	TDS. F, Cl, SO4 (1 L bottle, Cool, 0-6C)	Ra-226, Ra-228 (Three (six every 10th*) 1 L bottles, pH<2, HNO3)				Sample Specific Notes:
MW-3D	10/22/2018	840	G	GW	1				X					220156
MW-6D	10/22/2018	900	G	GW	1				X					220157
MW-7D	10/22/2018	1100	G	GW	1				X					220158
MW-8D	10/22/2018	1040	G	GW	1				X					220159
MW-9D	10/22/2018	920	G	GW	1				X					220160
MW-15	10/22/2018	940	G	GW	1				X					220161
DUPLICATE - LANDFILL	10/22/2018	840	G	GW	1				X					220162
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ________; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by: [signature]	Company: EAGLE	Date/Time: 10/24/18 1625	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 10/24/18 16:25

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail Walk in (Shuttle)
Other	Other
	Tracking #

Client Jill Parker With

Received By JTD

Received Date 10/24/18

Open Date

Sample Matrix: DGA PCB Oil (Water) Oil Soil

Solid Liquid Other

Container Temp Read 0 (Thermometer Serial #F04103)

Correction Factor +1.2

Corrected Temp 1.2

Project I.D. 38595

Were samples received on ice? (YES) NO

Did container arrive in good condition? (YES) NO

Was sample documentation received? (YES) NO

Was documentation filled out properly? (YES) NO

Were samples labeled properly? (YES) NO

Were correct containers used? (YES) NO

Were the pH's of samples appropriately checked? YES (NO) N/A

Total number of sample containers 7

Was any corrective action taken? (NO)

Person Contacted

Date & Time

Comments

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 11/16/2018***

MW-3D

Sample Number: 183735-001 **Date Collected: 10/22/2018 08:40** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.02	mg/L		0.02	0.005	GES	11/14/2018 15:32	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	142	mg/L		0.1	0.02	GES	11/14/2018 15:32	EPA 200.8-1994, Rev. 5.4

MW-6D

Sample Number: 183735-002 **Date Collected: 10/22/2018 09:00** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	4.34	mg/L		0.02	0.005	GES	11/14/2018 15:37	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	237	mg/L		0.1	0.02	GES	11/14/2018 15:37	EPA 200.8-1994, Rev. 5.4

MW-7D

Sample Number: 183735-003 **Date Collected: 10/22/2018 11:00** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.10	mg/L		0.02	0.005	GES	11/14/2018 15:42	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	357	mg/L		0.1	0.02	GES	11/14/2018 15:42	EPA 200.8-1994, Rev. 5.4

MW-8D

Sample Number: 183735-004 **Date Collected: 10/22/2018 10:40** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.75	mg/L		0.1	0.02	GES	11/14/2018 15:47	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	1290	mg/L		0.4	0.06	GES	11/14/2018 15:47	EPA 200.8-1994, Rev. 5.4

MW-9D

Sample Number: 183735-005 **Date Collected: 10/22/2018 09:20** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	7.19	mg/L		0.02	0.005	GES	11/14/2018 15:52	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	199	mg/L		0.1	0.02	GES	11/14/2018 15:52	EPA 200.8-1994, Rev. 5.4

MW-15

Sample Number: 183735-006 **Date Collected: 10/22/2018 09:40** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	8.90	mg/L		0.02	0.005	GES	11/14/2018 15:57	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	250	mg/L		0.1	0.02	GES	11/14/2018 15:57	EPA 200.8-1994, Rev. 5.4

Duplicate - Landfill

Sample Number: 183735-007 **Date Collected: 10/22/2018 08:40** **Date Received: 10/30/2018**

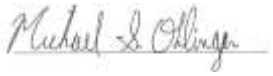
Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.985	mg/L		0.02	0.005	GES	11/14/2018 16:02	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	141	mg/L		0.1	0.02	GES	11/14/2018 16:02	EPA 200.8-1994, Rev. 5.4

Equipment Blank

Sample Number: 183735-008 **Date Collected: 10/22/2018 11:20** **Date Received: 10/30/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.015	mg/L		0.005	0.0009	GES	11/14/2018 16:06	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	0.005	mg/L	J	0.02	0.003	GES	11/14/2018 16:06	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.



Michael Ohlinger, Chemist

Email msohlinger@aep.com *Tel.*

Fax 614-836-4168 *Audinet 8-210-*

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 38807
Date Received: 11/29/2018

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 220948
Cust Sample ID: MW-3D
Sample Desc.: Coal Combustion Residuals

Collected Date: 11/28/2018
Location: Northeastern P.P.

By: KM
Matrix: Water

Water (220948)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Fluoride	0.648	mg/L	0.083	1	EPA 300.0	12/04/2018 16:27	J	GB

AEP Sample ID : 220949
Cust Sample ID: MW-6D
Sample Desc.: Coal Combustion Residuals

Collected Date: 11/28/2018
Location: Northeastern P.P.

By: KM
Matrix: Water

Water (220949)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Fluoride	0.844	mg/L	0.083	1	EPA 300.0	12/04/2018 17:04	J	GB

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
12/4/2018	Fluoride	220840	<0.083	10	10	100.0	10	10.1	101.0		0.0	GB
12/4/2018	Fluoride		<0.083									GB
12/4/2018	Fluoride			10	10	100.0						GB

Code ***Code Description***

J Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).

Sandra D. Wallace
Laboratory Manager

19-Dec-18
Report Date

JOB 11-29-18

Chain of Custody Record

Program: 2ND HALF 2018 DETECTION MONITORING; 2 OF 2

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP CCR
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (In Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact: | Date:

For Lab Use Only:
COC/Order #: COC #38807

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	Mercury (500 mL bottle, pH<2, HNO3)	dissolved Fe and Mn (Field-filter 500 mL bottle, then pH<2, HNO3)	Fluoride (500 mL bottle, Cool, 0-6C)	Ra-226, Ra-228 (Three (six every 10th*) 1 L bottles, pH<2, HNO3)				Sample Specific Notes:
MW-3D	11/28/2018	930	G	GW	1				X					220948
MW-6D	11/28/2018	950	G	GW	1				X					220947
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	11/29/18 1610		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Date/Time: 11/29/18 16:10

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail Walk in (Shuttle)
Other	Other
	Tracking #

Client Jill Parker-Witt
Received By JTD
Received Date 11/29/18
Open Date

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read 0 (Thermometer Serial #F04103)
Correction Factor +1.2
Corrected Temp 1.2

Project I.D. 38807

Were samples received on ice? (YES) NO

Did container arrive in good condition?	(YES)	NO
Was sample documentation received?	(YES)	NO
Was documentation filled out properly?	(YES)	NO
Were samples labeled properly?	(YES)	NO
Were correct containers used?	(YES)	NO
Were the pH's of samples appropriately checked?	YES	(NO) N/A

Total number of sample containers 2

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

Form REP-703
Rev. 2, 05/2016

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 12/28/2018***

MW-4D

Sample Number: 184031-001 **Date Collected: 11/28/2018 08:50** **Date Received: 12/3/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Arsenic, As	1.31	ug/L		0.5	0.2	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Barium, Ba	171	ug/L		0.5	0.1	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	0.06	ug/L	J	0.2	0.05	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	0.3	ug/L	J	1	0.2	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	0.677	ug/L		0.2	0.1	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.3	ug/L	J	0.5	0.1	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	8	ug/L	J	10	2	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Selenium, Se	0.2	ug/L	J	1	0.2	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 0.5	ug/L	U	2	0.5	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Boron, B	1.24	mg/L		0.02	0.005	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	193	mg/L		0.1	0.02	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.00378	mg/L		0.001	0.00005	GES	12/17/2018 15:38	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	1.21	pCi/L	0.17	0.53	jls	12/27/2018	SW-846 9320-2014,Rev. 1.0
Radium-226	0.419	pCi/L	0.087	0.10	jls	12/26/2018	SW-846 9315-1986,Rev. 0

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

MW-5D

Sample Number: 184031-002 **Date Collected: 11/28/2018 11:35** **Date Received: 12/3/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Arsenic, As	1.15	ug/L		0.5	0.2	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Barium, Ba	113	ug/L		0.5	0.1	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	0.06	ug/L	J	0.2	0.05	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	0.5	ug/L	J	1	0.2	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	0.324	ug/L		0.2	0.1	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.4	ug/L	J	0.5	0.1	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	2	ug/L	J	10	2	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Selenium, Se	0.3	ug/L	J	1	0.2	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 0.5	ug/L	U	2	0.5	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Boron, B	0.612	mg/L		0.02	0.005	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	143	mg/L		0.1	0.02	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.0121	mg/L		0.001	0.00005	GES	12/17/2018 15:43	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	1.99	pCi/L	0.16	0.48	jls	12/27/2018	SW-846 9320-2014,Rev. 1.0
Radium-226	0.403	pCi/L	0.070	0.087	jls	12/26/2018	SW-846 9315-1986,Rev. 0

The carrier recovery is outside the established range of 30-110%.

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

MW-12D

Sample Number: 184031-003 **Date Collected: 11/28/2018 13:25** **Date Received: 12/3/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	0.3	ug/L	J	0.5	0.1	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Arsenic, As	3.99	ug/L		0.5	0.2	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Barium, Ba	71.7	ug/L		0.5	0.1	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	0.1	ug/L	J	0.5	0.1	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	0.33	ug/L		0.2	0.05	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	1.70	ug/L		1	0.2	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	0.989	ug/L		0.2	0.1	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Lead, Pb	4.12	ug/L		0.5	0.1	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	744	ug/L		10	2	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Selenium, Se	1.9	ug/L		1	0.2	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 0.5	ug/L	U	2	0.5	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Boron, B	9.69	mg/L		0.02	0.005	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	103	mg/L		0.1	0.02	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.00483	mg/L		0.001	0.00005	GES	12/17/2018 15:48	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Radiochemistry*	Result	Units	UNC* (+ / -)	MDA*	Analysis By	Analysis Date/Time	Method
Radium-228	1.05	pCi/L	0.15	0.46	jls	12/27/2018	SW-846 9320-2014,Rev. 1.0
Radium-226	0.436	pCi/L	0.076	0.084	jls	12/26/2018	SW-846 9315-1986,Rev. 0

The carrier recovery is outside the established range of 30-110%.

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

Duplicate

Sample Number: 184031-004 **Date Collected:** 11/28/2018 08:50 **Date Received:** 12/3/2018

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Arsenic, As	1.25	ug/L		0.5	0.2	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Barium, Ba	171	ug/L		0.5	0.1	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	0.05	ug/L	J	0.2	0.05	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	0.3	ug/L	J	1	0.2	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	0.668	ug/L		0.2	0.1	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Lead, Pb	0.3	ug/L	J	0.5	0.1	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	9	ug/L	J	10	2	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Selenium, Se	0.2	ug/L	J	1	0.2	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 0.5	ug/L	U	2	0.5	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Boron, B	1.17	mg/L		0.02	0.005	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	201	mg/L		0.1	0.02	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.00391	mg/L		0.001	0.00005	GES	12/17/2018 15:53	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

Equipment Blank

Sample Number: 184031-005 **Date Collected:** 11/28/2018 15:00 **Date Received:** 12/3/2018

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Antimony, Sb	< 0.02	ug/L	U	0.1	0.02	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Arsenic, As	< 0.03	ug/L	U	0.1	0.03	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Barium, Ba	0.05	ug/L	J	0.1	0.02	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Beryllium, Be	< 0.02	ug/L	U	0.1	0.02	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Cadmium, Cd	< 0.01	ug/L	U	0.05	0.01	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Chromium, Cr	< 0.04	ug/L	U	0.2	0.04	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Cobalt, Co	< 0.02	ug/L	U	0.05	0.02	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Lead, Pb	< 0.02	ug/L	U	0.1	0.02	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Molybdenum, Mo	< 0.4	ug/L	U	2	0.4	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Selenium, Se	< 0.03	ug/L	U	0.2	0.03	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Thallium, Tl	< 0.1	ug/L	U	0.5	0.1	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Boron, B	0.024	mg/L		0.005	0.0009	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	0.01	mg/L	J	0.02	0.003	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4
Lithium, Li	0.00002	mg/L	J	0.0002	0.00001	GES	12/17/2018 15:58	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

MW-3D

Sample Number: 184031-006 **Date Collected:** 11/28/2018 09:30 **Date Received:** 12/3/2018

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.964	mg/L		0.02	0.005	GES	12/17/2018 16:03	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

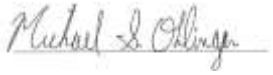
MW-15

Sample Number: 184031-007 **Date Collected: 11/28/2018 11:00** **Date Received: 12/3/2018**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Calcium, Ca	119	mg/L		0.1	0.02	GES	12/17/2018 16:08	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



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AEP ANALYTICAL CHEMISTRY SERVICES

Analysis Report

Report ID : 39317
Date Received: 02/28/2019

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 223097 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-2D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223097)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	0.000028	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 12:10		LNM

Water (223097)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1218	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

AEP Sample ID : 223098 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-3D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223098)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 12:27	U	LNM

Water (223098)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	700	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

AEP Sample ID : 223099 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-4D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223099)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 12:29	U	LNM

Water (223099)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	696	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

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Fax: (318) 673-3960

AEP Sample ID : 223100 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-5D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223100)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:35	U	LNM

Water (223100)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	616	mg/L	2	1	SM 2540 C-2011	03/02/2019 16:00		JTD

AEP Sample ID : 223101 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-6D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223101)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	0.000115	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:38		LNM

Water (223101)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1144	mg/L	2	1	SM 2540 C-2011	03/02/2019 16:00		JTD

AEP Sample ID : 223102 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-7D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223102)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	0.000006	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:41	J	LNM

Water (223102)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	4500	mg/L	2	1	SM 2540 C-2011	03/02/2019 16:00		JTD

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 39317
Date Received: 02/28/2019

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 223103 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-8D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223103)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:44	U	LNM

Water (223103)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	17128	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

AEP Sample ID : 223104 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-9D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223104)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	0.000019	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:47	J	LNM

Water (223104)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1174	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

AEP Sample ID : 223105 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-12D **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223105)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:50	U	LNM

Water (223105)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1014	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 39317
Date Received: 02/28/2019

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

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Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 223106 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: MW-15 **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223106)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	0.000007	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 13:53	J	LNM

Water (223106)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1046	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

AEP Sample ID : 223107 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: Duplicate Landfill **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223107)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 14:02	U	LNM

Water (223107)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1072	mg/L	2	1	SM 2540 C-2011	03/02/2019 14:02		JTD

AEP Sample ID : 223108 **Collected Date:** 02/27/2019 **By:** KM
Cust Sample ID: Equipment Blank Landfill **Location:** Northeastern Power Plant **Matrix:** Water
Sample Desc.: Coal Combustion Residuals (CCR)

Metals (223108)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Mercury	< 0.000005	mg/L	0.000005	1	EPA 7470A 1994	03/06/2019 14:21	U	LNM

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AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 39317
Date Received: 02/28/2019

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
3/6/2019	Mercury	223139.2	<0.00000	0.001	0.0008521	85.2	0.001	0.000892	89.2		2.0	LNM
3/6/2019	Mercury	223107.2	<0.00000	0.001	0.00097	97.0	0.001	0.0009418	94.2		3.4	LNM
3/6/2019	Mercury	223097.2	<0.00000	0.001	0.00097	97.0	0.001	0.0008259	82.6		2.5	LNM
3/2/2019	Solids, Total Dissolved (TDS)	223111	<2	99.33	100	100.7	2806	2794	99.6		3.2	JTD
3/2/2019	Solids, Total Dissolved (TDS)	223110	<2	99.33	98	98.7	2806	2766	98.6		3.4	JTD

Code ***Code Description***

J Concentration estimated. Analyte was detected between the Method Detection Limit (MDL) and Minimum Quantitation Limit (MQL).

U Analyte concentration below MDL.

Jonathan Barnhill
Quality Assurance Officer

15-Apr-19
Report Date

Chain of Custody Record

S.N. 2-28-19

Program: Coal Combustion Residuals (CCR)

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: *Jonathan Barnhill (318-673-3803)*
John Davis (318-673-3811)

Project Name: Northeastern PP CCR

Contact Name: Jill Parker-Witt

Contact Phone: 318-673-3816

Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
◉ Routine (28 days for Monitoring Wells)

Site Contact:

Date:

For Lab Use Only:
COC/Order #: QC# 39317

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO3 — Mercury	Field-filter 500 mL bottle, then pH<2, HNO3 — dissolved Fe and Mn	250 mL bottle, Cool, 0-6C — TDS	Three (six every 10th*) 1 L bottles, pH<2, HNO3 — Ra-226, Ra-228				Sample Specific Notes:
MW-2D	2/27/2019	1200	G	GW	2		X		X					223097.1 - 223097.2
MW-3D	2/27/2019	900	G	GW	2		X		X					223098.1 - 223098.2
MW-4D	2/27/2019	835	G	GW	2		X		X					223099.1 - 223099.2
MW-5D	2/27/2019	1225	G	GW	2		X		X					223100.1 - 223100.2
MW-6D	2/27/2019	1000	G	GW	2		X		X					223101.1 - 223101.2
MW-7D	2/27/2019	810	G	GW	2		X		X					223102.1 - 223102.2
MW-8D	2/27/2019	1350	G	GW	2		X		X					223103.1 - 223103.2
MW-9D	2/27/2019	1022	G	GW	2		X		X					223104.1 - 223104.2
MW-12D	2/27/2019	1325	G	GW	2		X		X					223105.1 - 223105.2
MW-15	2/27/2019	1120	G	GW	2		X		X					223106.1 - 223106.2
DUPLICATE LANDFILL	2/27/2019	835	G	GW	2		X		X					223107.1 - 223107.2
EQUIPMENT BLANK LANDFILL	2/27/2019	1340	G	W	1		X							223108
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Eagle	Date/Time: 02/28/19 1555	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time: 2/28/19 15:55

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer Bottle	UPS FEDEX US Mail ~~Walk in~~ Shuttle
Other	Other
	Tracking #

Client Jill Parker-Witt
Received By JTD
Received Date 2/28/19
Open Date

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read 3 (Thermometer Serial #F04103)
Correction Factor +1.2
Corrected Temp 4.2

Project I.D. 39317

Were samples received on ice? (YES) NO

Did container arrive in good condition?	(YES)	NO
Was sample documentation received?	(YES)	NO
Was documentation filled out properly?	(YES)	NO
Were samples labeled properly?	(YES)	NO
Were correct containers used?	(YES)	NO
Were the pH's of samples appropriately checked?	(YES)	NO

Total number of sample containers 23

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

Sample ID	Analysis	pH	Preservative Added / Lot #
MW-2D	Mercury	<2	/
MW-3D			/
MW-4D			/
MW-5D			/
MW-6D			/
MW-7D			/
MW-8D			/
MW-9D			/
MW-12D			/
MW-15			/
Dup Landfill			/
Equip Landfill			/
			/
			/
			/
			/
			/
			/
			/
			/

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 4/15/2019***

MW-2D

Sample Number: 190787-001 **Date Collected: 02/27/2019 12:00** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	16.4	mg/L		0.1	0.03	CRJ	03/22/2019 09:54	EPA 300.1-1997, Rev. 1.0
Fluoride, F	1.56	mg/L		0.2	0.04	CRJ	03/22/2019 09:54	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	612	mg/L		10	2	CRJ	03/21/2019 05:09	EPA 300.1-1997, Rev. 1.0

MW-3D

Sample Number: 190787-002 **Date Collected: 02/27/2019 09:00** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	13.2	mg/L		0.1	0.03	CRJ	03/21/2019 20:53	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.71	mg/L		0.2	0.04	CRJ	03/21/2019 20:53	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	223	mg/L		10	2	CRJ	03/21/2019 05:32	EPA 300.1-1997, Rev. 1.0

MW-4D

Sample Number: 190787-003 **Date Collected: 02/27/2019 08:35** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	31.2	mg/L		0.1	0.03	MGK	03/21/2019 13:13	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.30	mg/L		0.2	0.04	MGK	03/21/2019 13:13	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	463	mg/L		10	2	CRJ	03/21/2019 05:55	EPA 300.1-1997, Rev. 1.0

MW-5D

Sample Number: 190787-004 **Date Collected: 02/27/2019 12:25** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	26.7	mg/L		0.1	0.03	MGK	03/21/2019 13:59	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.50	mg/L		0.2	0.04	MGK	03/21/2019 13:59	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	153	mg/L		10	2	CRJ	03/21/2019 06:17	EPA 300.1-1997, Rev. 1.0

MW-6D

Sample Number: 190787-005 **Date Collected: 02/27/2019 10:00** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	26.9	mg/L		0.1	0.03	MGK	03/21/2019 14:22	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.89	mg/L		0.2	0.04	MGK	03/21/2019 14:22	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	496	mg/L		10	2	CRJ	03/21/2019 07:03	EPA 300.1-1997, Rev. 1.0

MW-7D

Sample Number: 190787-006 **Date Collected: 02/27/2019 08:10** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	385	mg/L		1	0.3	CRJ	03/21/2019 07:26	EPA 300.1-1997, Rev. 1.0
Fluoride, F	1.66	mg/L		0.2	0.04	MGK	03/21/2019 14:45	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	2390	mg/L		10	2	CRJ	03/21/2019 07:26	EPA 300.1-1997, Rev. 1.0

MW-8D

Sample Number: 190787-007 **Date Collected: 02/27/2019 13:50** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	9650	mg/L		20	8	CRJ	03/21/2019 15:30	EPA 300.1-1997, Rev. 1.0
Fluoride, F	2.28	mg/L		0.8	0.2	CRJ	03/21/2019 15:53	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	43.4	mg/L		5	0.8	CRJ	03/21/2019 15:53	EPA 300.1-1997, Rev. 1.0

MW-9D

Sample Number: 190787-008 **Date Collected: 02/27/2019 10:22** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	28.9	mg/L		0.1	0.03	MGK	03/21/2019 16:41	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.89	mg/L		0.2	0.04	MGK	03/21/2019 16:41	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	555	mg/L		10	2	CRJ	03/21/2019 08:15	EPA 300.1-1997, Rev. 1.0

MW-12D

Sample Number: 190787-009 **Date Collected: 02/27/2019 13:25** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	16.8	mg/L		0.1	0.03	MGK	03/21/2019 17:04	EPA 300.1-1997, Rev. 1.0
Fluoride, F	2.11	mg/L		0.2	0.04	MGK	03/21/2019 17:04	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	564	mg/L		10	2	CRJ	03/21/2019 09:00	EPA 300.1-1997, Rev. 1.0

MW-15

Sample Number: 190787-010 **Date Collected: 02/27/2019 11:20** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	24.3	mg/L		0.1	0.03	MGK	03/21/2019 17:27	EPA 300.1-1997, Rev. 1.0
Fluoride, F	1.45	mg/L		0.2	0.04	MGK	03/21/2019 17:27	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	574	mg/L		10	2	CRJ	03/21/2019 09:23	EPA 300.1-1997, Rev. 1.0

Duplicate Landfill

Sample Number: 190787-011 **Date Collected: 02/27/2019 08:35** **Date Received: 3/5/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Chloride, Cl	29.9	mg/L		0.1	0.03	MGK	03/21/2019 18:13	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.30	mg/L		0.2	0.04	MGK	03/21/2019 18:13	EPA 300.1-1997, Rev. 1.0
Sulfate, SO4	462	mg/L		10	2	CRJ	03/21/2019 09:46	EPA 300.1-1997, Rev. 1.0

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Michael Ohlinger, Chemist
Email msohlinger@aep.com *Tel.*
Fax 614-836-4168 *Audinet 8-210-*

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 4/15/2019***

MW-2D

Sample Number: 190825-001 **Date Collected: 02/27/2019 12:00** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	9.67	mg/L		0.02	0.005	GES	04/04/2019 14:38	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	9.26	mg/L		0.1	0.02	GES	04/04/2019 14:38	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-3D

Sample Number: 190825-002 **Date Collected: 02/27/2019 09:00** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.973	mg/L		0.02	0.005	GES	04/04/2019 14:43	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	127	mg/L		0.1	0.02	GES	04/04/2019 14:43	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-4D

Sample Number: 190825-003 **Date Collected: 02/27/2019 08:35** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.42	mg/L		0.02	0.005	GES	04/04/2019 14:48	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	187	mg/L		0.1	0.02	GES	04/04/2019 14:48	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-5D

Sample Number: 190825-004 **Date Collected: 02/27/2019 12:25** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.531	mg/L		0.02	0.005	GES	04/04/2019 14:53	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	130	mg/L		0.1	0.02	GES	04/04/2019 14:53	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-6D

Sample Number: 190825-005 **Date Collected: 02/27/2019 10:00** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	3.63	mg/L		0.02	0.005	GES	04/04/2019 14:58	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	360	mg/L		0.1	0.02	GES	04/04/2019 14:58	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-7D

Sample Number: 190825-006 **Date Collected: 02/27/2019 08:10** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.00	mg/L		0.02	0.005	GES	04/04/2019 15:03	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	185	mg/L		0.1	0.02	GES	04/04/2019 15:03	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-8D

Sample Number: 190825-007 **Date Collected: 02/27/2019 13:50** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.62	mg/L		0.02	0.005	GES	04/04/2019 15:08	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	788	mg/L		0.1	0.02	GES	04/04/2019 15:08	EPA 200.8-1994, Rev. 5.4

Laboratory Fortified Blank and Laboratory Fortified Blank Duplicate relative percent difference was greater than the quality control limit of 10%.

MW-9D

Sample Number: 190825-008 **Date Collected: 02/27/2019 10:22** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	6.49	mg/L		0.1	0.02	CTK	04/05/2019 12:02	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	155	mg/L		0.4	0.06	CTK	04/05/2019 12:02	EPA 200.8-1994, Rev. 5.4

MW-12D

Sample Number: 190825-009 **Date Collected: 02/27/2019 13:25** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	8.88	mg/L		0.1	0.02	CTK	04/05/2019 12:07	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	64.7	mg/L		0.4	0.06	CTK	04/05/2019 12:07	EPA 200.8-1994, Rev. 5.4

MW-15

Sample Number: 190825-010 **Date Collected: 02/27/2019 11:20** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	8.34	mg/L		0.1	0.02	CTK	04/05/2019 12:12	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	96.9	mg/L		0.4	0.06	CTK	04/05/2019 12:12	EPA 200.8-1994, Rev. 5.4

Duplicate Landfill

Sample Number: 190825-011 **Date Collected: 02/27/2019 08:35** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.45	mg/L		0.02	0.005	GES	04/04/2019 17:21	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	198	mg/L		0.1	0.02	GES	04/04/2019 17:21	EPA 200.8-1994, Rev. 5.4

Equipment Blank Landfill

Sample Number: 190825-012 **Date Collected: 02/27/2019 13:40** **Date Received: 3/7/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.006	mg/L		0.005	0.0009	CTK	04/05/2019 11:57	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	0.01	mg/L	J	0.02	0.003	CTK	04/05/2019 11:57	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.

Michael Ohlinger, Chemist

Email msohlinger@aep.com *Tel.*

Fax 614-836-4168 *Audinet 8-210-*

502 North Allen Ave.
Shreveport, LA 71101
Phone: (318) 673-3802
Fax: (318) 673-3960

AEP ANALYTICAL CHEMISTRY SERVICES
Analysis Report

Report ID : 39755
Date Received: 05/09/2019

Company: SEP - Environmental (JP-W)
Contact: Jill Parker-Witt
Phone: (318) 673-3816

Address: 502 N. Allen Avenue
Shreveport, LA 71101
Fax: (318) 673-3960

AEP Sample ID : 225074
Cust Sample ID: MW-6D
Sample Desc.: Coal Combustion Residuals (CCR)

Collected Date: 05/07/2019
Location: Northeastern Power Plant

By: KM
Matrix: Water

Water (225074)

Parameter	Value	Unit	Det. Limit	Dil./Conc.	Method	Analysis Date/Time	Codes	Tech
Solids, Total Dissolved (TDS)	1038	mg/L	2	1	SM 2540 C-2011	05/13/2019 16:50		GB

Quality Control Data

* Quality control units are the same as reported analytical results

Date	Parameter	Sample ID	Blank Value *	Standard			Spike			Surrogate % Recovery	Duplicate % Difference	Tech
				Value *	Recovery*	%	Value *	Recovery*	%			
5/13/2019	Solids, Total Dissolved (TDS)	225129		1000	876	87.6	2880	2787	96.8		14.9	GB
5/13/2019	Solids, Total Dissolved (TDS)		<2									GB

Jonathan Barnhill
Quality Assurance Officer

05-Jun-19
Report Date

Chain of Custody Record

5/10/19

Program: 2 of 2 Sampling

Shreveport Chemical Laboratory (SCL)
502 N. Allen Ave.
Shreveport , LA 71101
Contacts: Jonathan Barnhill (318-673-3803)
John Davis (318-673-3811)

Project Name: Northeastern PP
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenneth McDonald

Analysis Turnaround Time (in Calendar Days)
☐ Routine (28 days for Monitoring Wells)

Site Contact:

Date:

For Lab Use Only:
COC/Order #: COC #39755

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	Mercury (250 mL bottle, pH<2, HNO3)	dissolved Fe and Mn (Field-filter 500 mL bottle, then pH<2, HNO3)	TDS (250 mL bottle, Cool, 0-6C)	Ra-226, Ra-228 (Three (six every 10th*) 1 L bottles, pH<2, HNO3)				Sample Specific Notes:
MW-6D	5/7/2019	1155	G	GW	1				X					225074
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

* *Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	FAUH	05/09/19 0856		
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Sandra Wallace	Date/Time: 5-9-19 9:00

SHREVEPORT CHEMICAL LABORATORY

502 N. Allen Ave.
Shreveport, LA 71101
Phone 318-673-3802
FAX 318-673-3960

PROJECT RECEIPT FORM

Container Type	Delivery Type
(Ice Chest) Bag Action Pak PCB Mailer (Bottle) Other	UPS FEDEX US Mail Walk in (Shuttle) Other
	Tracking #

Client Jill Wiff Northeastern
Received By Sandra Wallace
Received Date 5-9-19
Open Date

Sample Matrix: DGA PCB Oil (Water) Oil Soil
Solid Liquid Other

Container Temp Read 0
Thermometer Serial #F04103
Correction Factor 1.2
Corrected Temp 1.2

Project I.D. 39755

Were samples received on ice? (YES) NO

Did container arrive in good condition? (YES) NO

Was sample documentation received? (YES) NO

Was documentation filled out properly? (YES) NO

Were samples labeled properly? (YES) NO

Were correct containers used? (YES) NO

Were the pH's of samples appropriately checked? YES (NO) N/A

Total number of sample containers 1

Was any corrective action taken? (NO)

Person Contacted
Date & Time

Comments

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 6/13/2019***

MW-3D

Sample Number: 191627-001 **Date Collected: 05/07/2019 11:20** **Date Received: 5/10/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.56	mg/L		0.05	0.009	GES	06/04/2019 15:26	EPA 200.8-1994, Rev. 5.4

MW-4D

Sample Number: 191627-002 **Date Collected: 05/07/2019 10:45** **Date Received: 5/10/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	419	mg/L		10	2	CRJ	05/21/2019 18:07	EPA 300.1-1997, Rev. 1.0

MW-5D

Sample Number: 191627-003 **Date Collected: 05/07/2019 12:30** **Date Received: 5/10/2019**

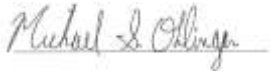
Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	158	mg/L		10	2	CRJ	05/21/2019 18:26	EPA 300.1-1997, Rev. 1.0

MW-6D

Sample Number: 191627-004 **Date Collected: 05/07/2019 11:55** **Date Received: 5/10/2019**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Calcium, Ca	185	mg/L		0.2	0.03	GES	06/04/2019 15:31	EPA 200.8-1994, Rev. 5.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.



Michael Ohlinger, Chemist
Email msohlinger@aep.com *Tel.*
Fax 614-836-4168 *Audinet 8-210-*

ATTACHMENT C
Statistical Analysis Output

GROUNDWATER STATS CONSULTING

January 3, 2020

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
941 Chatham Lane, #103
Columbus, OH 43221

Re: Northeastern Landfill - Background Update - 2019

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the background update and statistical analysis of the groundwater data for 2019 at American Electric Power's Northeastern Landfill. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at the Northeastern Landfill for the CCR program in 2017. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Downgradient wells**: MW-3D, MW-4D, MW-5D, MW-6D, MW-9D, MW-12D and MW-15.

Downgradient wells MW-4D, MW-5D and MW-12D were added at a later date to the monitoring well network and are included in the attached screening.

Data were sent electronically to Groundwater Stats Consulting, and the statistical analysis was reviewed by Dr. Kirk Cameron, PhD Statistician with MacStat Consulting and primary author of the USEPA Unified Guidance.

The following constituents were evaluated:

- **Appendix III parameters** – boron, calcium, chloride, fluoride, pH, sulfate, and TDS;

Time series plots for Appendix III parameters at all wells are provided for the purpose of screening data at these wells (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B). The time series plots are used to initially screen for suspected outliers and trends, while the box plots provide visual representation of variation within individual wells and between all wells.

Data at all wells were initially screening during October 2018 for the following: 1) outliers; 2) trends; 3) most appropriate statistical method for Appendix III parameters based on site characteristics of groundwater data upgradient of the facility; and 4) eligibility of downgradient wells when intrawell statistical methods are recommended. Power curves were provided with the previous screening to demonstrate that the selected statistical methods for Appendix III parameters comply with the USEPA Unified Guidance recommendations as discussed below. A summary of those findings is provided below.

Summary of Statistical Method:

1) Intrawell prediction limits, combined with a 1-of-2 resample plan for boron, calcium, chloride, fluoride, pH, sulfate, and TDS.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. While the false positive rate associated with the parametric limits is based on an annual 10% as recommended by the EPA Unified Guidance (2009), the false positive rate associated with the nonparametric limits is dependent upon the available background sample size, number of future comparisons, and verification resample plan. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean

and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

Historical Summary – October 2018 Background Screening

Outlier Evaluation

Time series plots were used to identify suspected outliers, or extreme values that would result in limits that are not conservative from a regulatory perspective, in proposed background data. Suspected outliers at all wells for Appendix III parameters were formally tested using Tukey's box plot method and, when identified, flagged in the computer database with "o" and deselected prior to construction of statistical limits.

Tukey's outlier test noted a few outliers that were flagged in the database, and were included in the Outlier Data Summary Table on the previous screening. Well MW-7D had observations reported during the 9/20/17 sample event that appeared different from other measurements within the same well; however, these values were not identified as outliers when tested with Tukey's test. A summary of these results was included in the previous reports.

Additionally, Tukey's test did not identify the reported measurement of 0.642 mg/L for fluoride in well MW-15; however, this value was significantly lower than the other measurements in this well and was flagged as an outlier in the database. Some low values exist in the data sets and appear on the graphs as possible low outliers relative to the Practical Quantitation Limit. However, these values are observed trace values (i.e. measurements reported by the laboratory between the Method Detection Limit and the Practical Quantitation Limit) and, therefore, were not flagged as outliers. A substitution of the most recent reporting limit was applied when varying detection limits existed in data.

No true seasonal patterns were observed on the time series plots for any of the detected data; therefore, no deseasonalizing adjustments were made to the data. When seasonal patterns are observed, data may be deseasonalized so that the resulting limits will correctly account for the seasonality as a predictable pattern rather than random variation or a release. It was noted that for each constituent evaluated, the highest concentrations are reported in the upgradient wells.

While trends may be visual, a quantification of the trend and its significance is needed. The Sen's Slope/Mann Kendall trend test was used to evaluate all data at each well to

identify statistically significant increasing or decreasing trends. In the absence of suspected contamination, significant trending data are typically not included as part of the background data used for construction of prediction limits. This step serves to eliminate the trend and, thus, reduce variation in background. When statistically significant decreasing trends are present, earlier data are evaluated to determine whether earlier concentration levels are significantly different than current reported concentrations and will be deselected as necessary. When the historical records of data are truncated for the reasons above, a summary report will be provided to show the date ranges used in construction of the statistical limits.

The results of the trend analyses showed several statistically significant increasing trends, primarily in background wells; and a few statistically significant decreasing trends, which were included in the Trend Test Summary table in the previous screening. No adjustments were made to the datasets at that time, since the majority of trends were noted in background wells and limited data are available at this time. Trends noted in background wells are generally an indication that concentrations are changing due to natural variation. However, as more data are collected, if it is determined that earlier measurements are no longer representative of present-day water quality, the records will be re-evaluated for possible truncation of earlier concentrations.

Appendix III – Determination of Spatial Variation

The Analysis of Variance (ANOVA) was used to statistically evaluate differences in average concentrations among upgradient wells, which assists in identifying the most appropriate statistical approach. Interwell tests, which compare downgradient well data to statistical limits constructed from pooled upgradient well data, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation and when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective.

The ANOVA identified variation for the majority of Appendix III parameters. Therefore, all parameters were further evaluated as described below for the appropriateness of intrawell prediction limits to accommodate the groundwater quality. A summary table of the ANOVA results was included with the previous screening.

Appendix III – Intrawell Method Eligibility Screening

Intrawell limits constructed from carefully screened background data from within each well serve to provide statistical limits that will rapidly identify a change in more recent compliance data from within a given well. This statistical method removes the element of variation across wells and eliminates the chance of mistaking natural spatial variation for a release from the facility. Prior to performing intrawell prediction limits, several steps were required to reasonably demonstrate downgradient water quality does not have existing impacts from the practices of the facility.

Exploratory data analysis was used as a general comparison of concentrations in downgradient wells for all Appendix III parameters recommended for intrawell analyses to concentrations reported in upgradient wells. Upper tolerance limits were used in conjunction with confidence intervals to determine whether the estimated averages in downgradient wells are higher than observed levels upgradient of the facility. The upper tolerance limits were constructed to represent the extreme upper range of possible background levels at the site.

In cases where downgradient average concentrations are higher than observed concentrations upgradient for a given constituent, an independent study and hydrogeological investigation are required to identify local geochemical conditions and expected groundwater quality for the region to justify an intrawell approach. Such an assessment is beyond the scope of services provided by Groundwater Stats Consulting. However, further discussion is included below regarding the use of intrawell prediction limits.

Parametric tolerance limits were constructed with a target of 99% confidence and 95% coverage using pooled upgradient well data for each of the Appendix III parameters. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. As more data are collected, the background population is better represented and the confidence and coverage levels increase.

Confidence intervals were constructed on downgradient wells for each of the Appendix III parameters, using the tolerance limits discussed above, to determine intrawell eligibility. When the entire confidence interval is above a background standard for a given parameter, interwell methods are initially recommended as the statistical method. Therefore, only parameters with confidence intervals which did not exceed background standards are eligible for intrawell prediction limits.

Confidence intervals for the above parameters were found to be within their respective background limits for all parameters except for boron. However, previous correspondence between Oklahoma Department of Environmental Quality and AEP demonstrates that due to natural variation in groundwater as well as changes in direction of groundwater flow, the background wells are not representative of upgradient groundwater quality in which case interwell statistical limits are not recommended. Therefore, all Appendix III parameters are evaluated using intrawell methods.

Background Update Summary – December 2019

Natural systems continuously evolve due to physical changes made to the environment. Examples include capping a landfill, paving areas near a well, or lining a drainage channel to prevent erosion. Periodic updating of background statistical limits will be necessary to accommodate these types of changes. In the intrawell case, data for all wells and constituents may re-evaluated when a minimum of 4 new data points are available to determine whether earlier concentrations are representative of present-day groundwater quality. In some cases, the earlier portion of data are deselected prior to construction of limits to provide sensitive limits that will rapidly detect changes in groundwater quality. Even though the data are excluded from the calculation, the values will continue to be reported and shown in tables and graphs.

In the event of an initial exceedance of compliance well data, the 1-of-2 verification resample plan allows for collection of an additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e. natural variation, an off-site source, practices at the site).

Prior to updating background data, samples were re-evaluated using Tukey's outlier test and visual screening with the May 2019 samples. A few outliers were noted for boron in well MW-3D, calcium in MW-3D, chloride in in MW-12D and MW-3D, and sulfate in MW-5D. from the previous screening. Calcium in MW-3D was not flagged as an outlier because it appeared to be an appropriate representation of background data. As mentioned above, flagged data are displayed in a lighter font and as a disconnected symbol on the time series reports, as well as in a lighter font on the accompanying data pages. An updated summary of Tukey's test results and flagged outliers follows this letter (Figure C). For constituents requiring intrawell prediction limits, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through October 4, 2017 for older wells to the new compliance samples at each well through May 2019 for existing wells to evaluate whether the groups are statistically different at the 99% confidence level,

in which case background data may be updated with compliance data (Figure D). Newer wells did not have enough new samples to fulfill the Mann-Whitney test, and therefore, were not updated with compliance data. Significant differences were noted between the two groups for boron in downgradient well MW-3D.

Typically, when the test concludes that the medians of the two groups are significantly different, particularly in the downgradient wells, the background are not updated to include the newer data but will be reconsidered in the future. However, the concentrations for boron in downgradient well MW-3D are lower than those reported in at least one upgradient well, and were therefore, updated. A summary of these results follows this letter and the test results are included with the Mann Whitney test section at the end of this report.

Intrawell prediction limits using all historical data for all wells through May 2019, combined with a 1-of-2 resample plan, were constructed and a summary of the updated limits follows this letter (Figure E). Future compliance observations at each well will be compared to these background limits during each subsequent semi-annual sampling event.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Northeastern Landfill. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

Andrew T. Collins
Groundwater Analyst

Kristina L. Rayner
Groundwater Statistician

Date Ranges

Date: 12/30/2019 4:26 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Boron (mg/L)
- MW-12D background:5/2/2018-5/7/2019
- MW-4D background:5/2/2018-5/7/2019
- MW-5D background:5/2/2018-5/7/2019

Calcium (mg/L)
- MW-12D background:3/15/2017-5/7/2019
- MW-4D background:3/15/2017-5/7/2019
- MW-5D background:3/14/2017-5/7/2019

Chloride (mg/L)
- MW-12D background:3/15/2017-5/7/2019
- MW-4D background:3/15/2017-5/7/2019
- MW-5D background:5/2/2018-5/7/2019

Fluoride (mg/L)
- MW-12D background:3/15/2017-5/7/2019
- MW-4D background:3/15/2017-5/7/2019
- MW-5D background:5/2/2018-5/7/2019

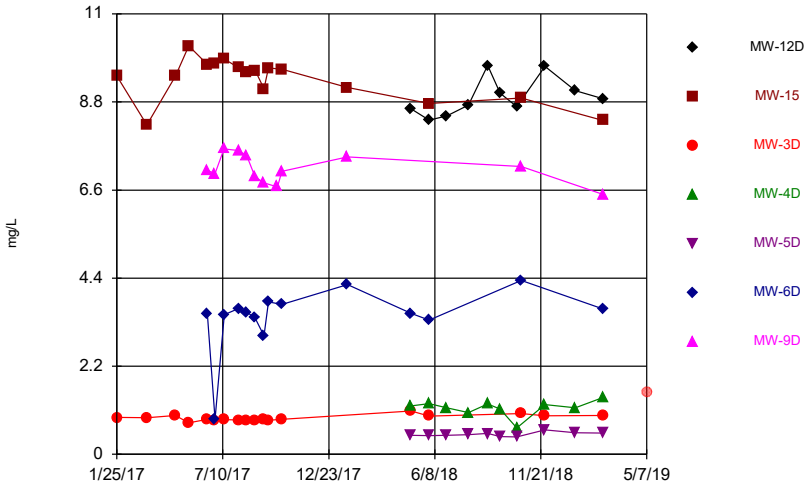
pH, field (SU)
- MW-12D background:5/2/2018-5/7/2019
- MW-4D background:5/2/2018-5/7/2019
- MW-5D background:5/2/2018-5/7/2019

Sulfate (mg/L)
- MW-12D background:3/15/2017-5/7/2019
- MW-4D background:3/15/2017-5/7/2019
- MW-5D background:5/2/2018-5/7/2019

Total Dissolved Solids [TDS] (mg/L)
- MW-12D background:3/15/2017-5/7/2019
- MW-4D background:3/15/2017-5/7/2019
- MW-5D background:5/2/2018-5/7/2019

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Time Series

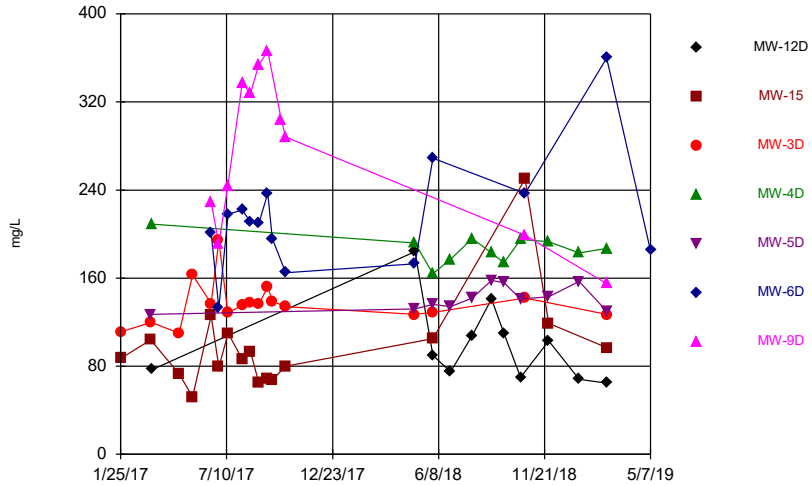


Constituent: Boron Analysis Run 12/30/2019 8:47 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Time Series

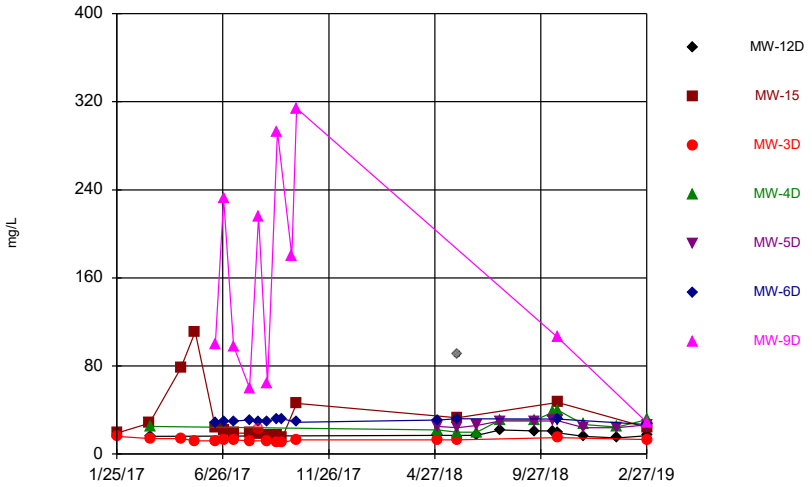


Constituent: Calcium Analysis Run 12/30/2019 8:47 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Time Series



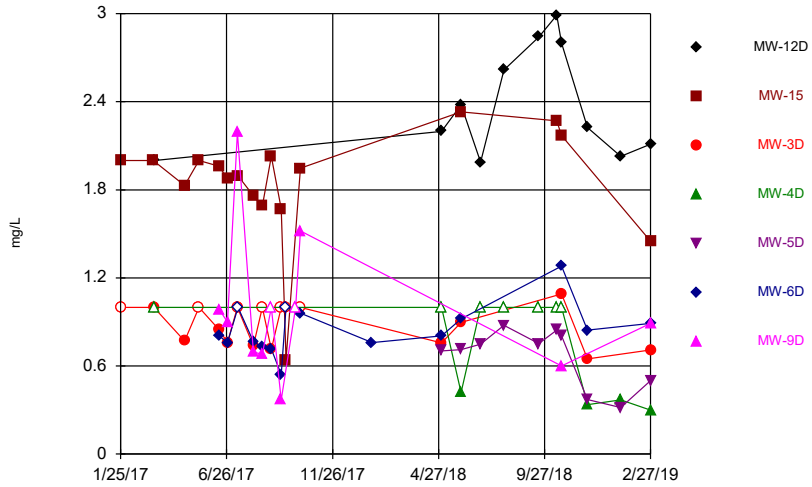
Constituent: Chloride Analysis Run 12/30/2019 8:47 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series



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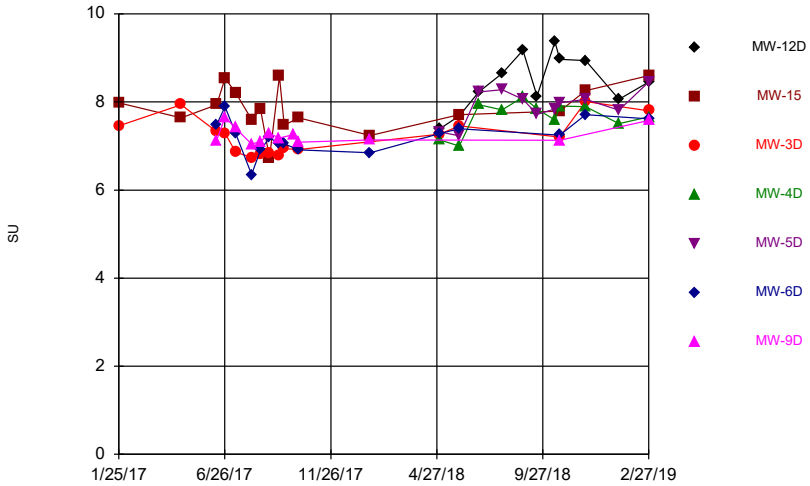
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

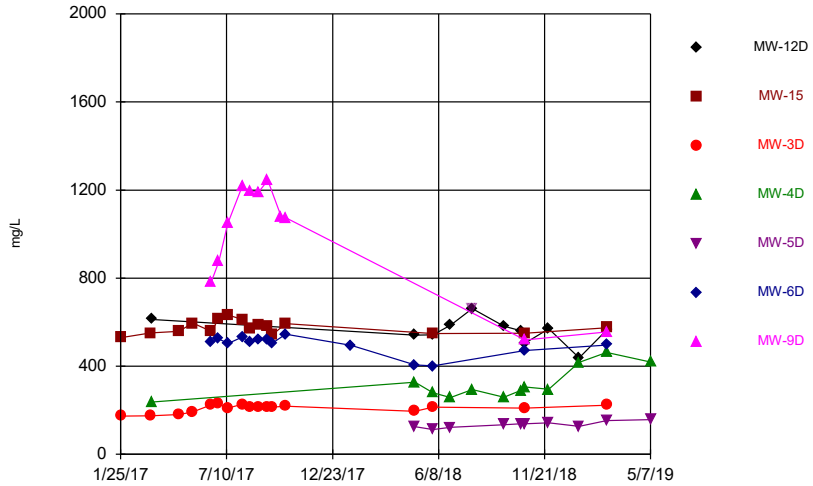
Time Series



Constituent: pH, field Analysis Run 12/30/2019 8:47 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

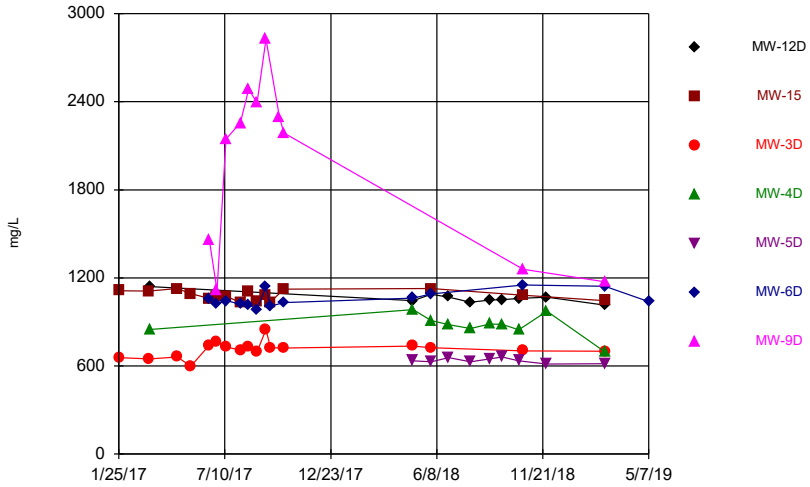
Time Series



Constituent: Sulfate Analysis Run 12/30/2019 8:47 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

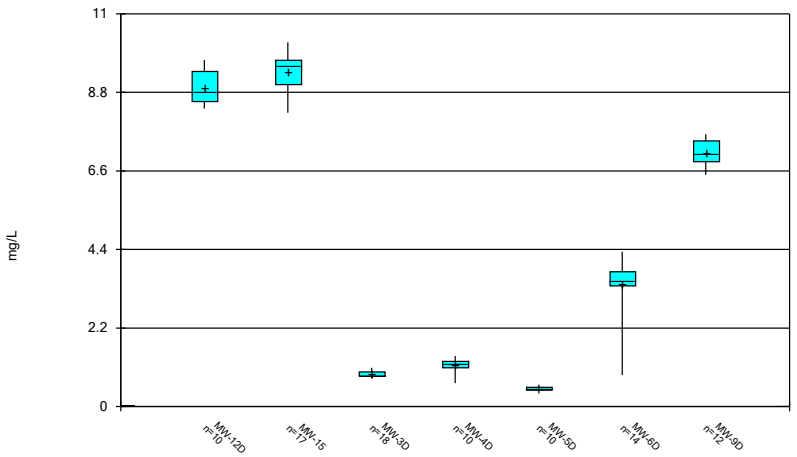
Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Time Series



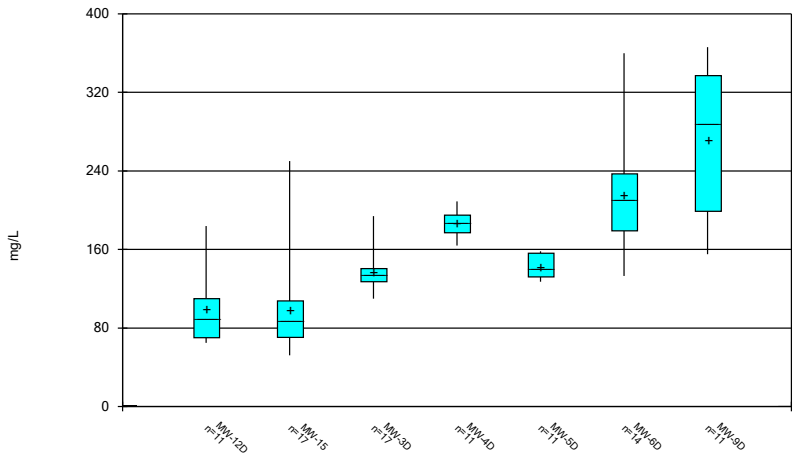
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 8:47 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



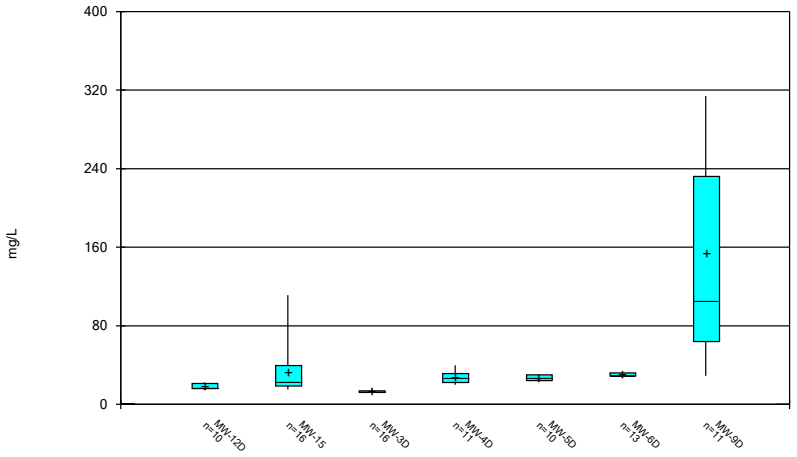
Constituent: Boron Analysis Run 12/30/2019 8:49 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



Constituent: Calcium Analysis Run 12/30/2019 8:49 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



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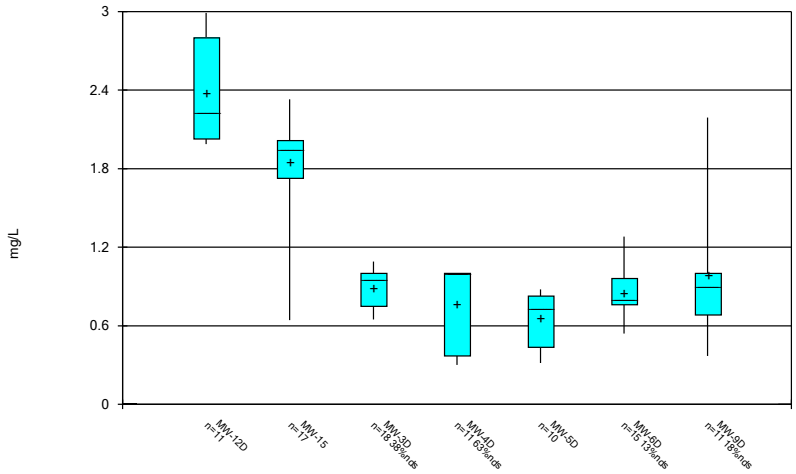
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



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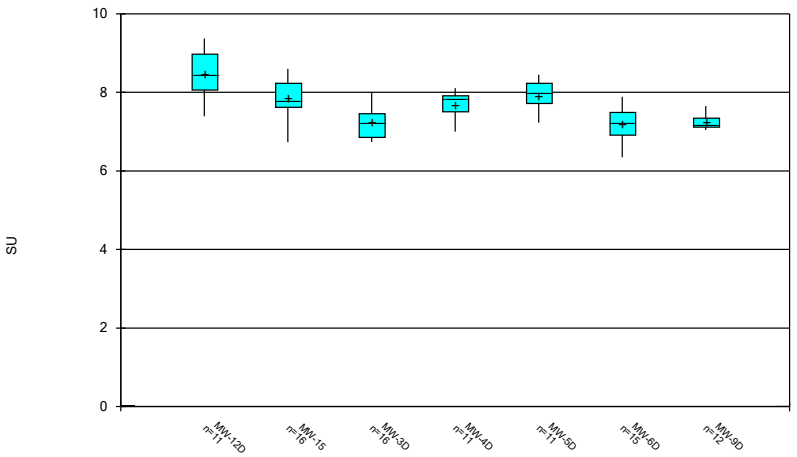
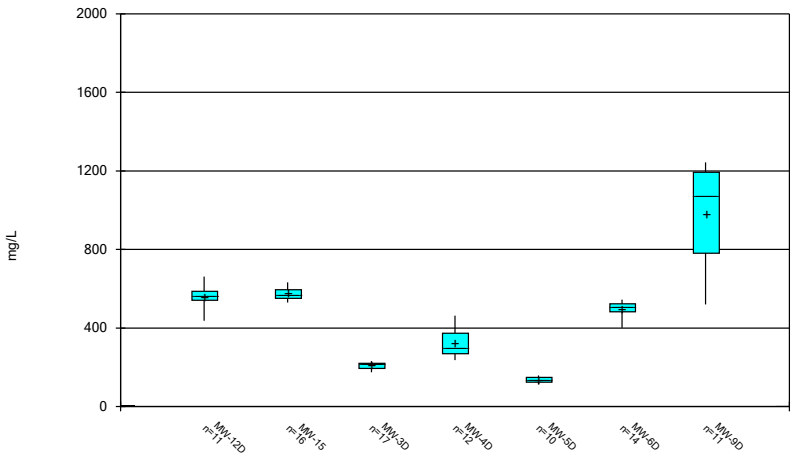
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



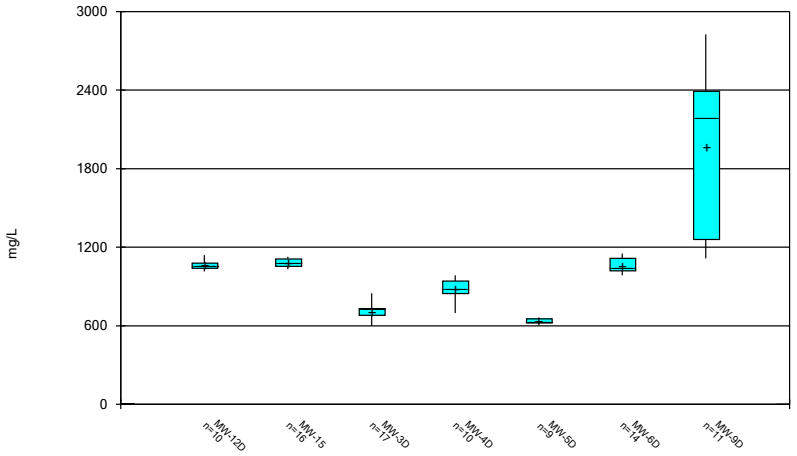
Constituent: pH, field Analysis Run 12/30/2019 8:49 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



Constituent: Sulfate Analysis Run 12/30/2019 8:49 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Box & Whiskers Plot



Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 8:49 AM
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Outlier Summary

Northeastern Landfill Client: Geosyntec Data: Northeastern LF Printed 12/30/2019, 8:51 AM

	MW-3D Boron (mg/L)	MW-12D Chloride (mg/L)	MW-3D Chloride (mg/L)	MW-5D Sulfate (mg/L)
8/17/2017			23 (o)	
5/30/2018		91 (o)		
7/31/2018				662 (o)
5/7/2019	1.56 (o)			

Outlier Analysis - Significant Results

Northeastern Landfill Client: Geosyntec Data: Northeastern LF Printed 12/30/2019, 4:35 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Boron (mg/L)	**MW-3D**	**Yes**	**1.56**	**5/7/2019**	**NP**	**19**	**0.9402**	**0.1666**	**ln(x)**	**ShapiroWilk**
Calcium (mg/L)	**MW-3D**	**Yes**	**194**	**6/28/2017**	**NP**	**17**	**136.6**	**19.71**	**ln(x)**	**ShapiroWilk**
Chloride (mg/L)	**MW-12D**	**Yes**	**91**	**5/30/2018**	**NP**	**11**	**24.71**	**22.12**	**ln(x)**	**ShapiroWilk**
Chloride (mg/L)	**MW-3D**	**Yes**	**23**	**8/17/2017**	**NP**	**17**	**13.53**	**2.759**	**ln(x)**	**ShapiroWilk**
Sulfate (mg/L)	**MW-5D**	**Yes**	**662**	**7/31/2018**	**NP**	**11**	**183.2**	**159.3**	**ln(x)**	**ShapiroWilk**

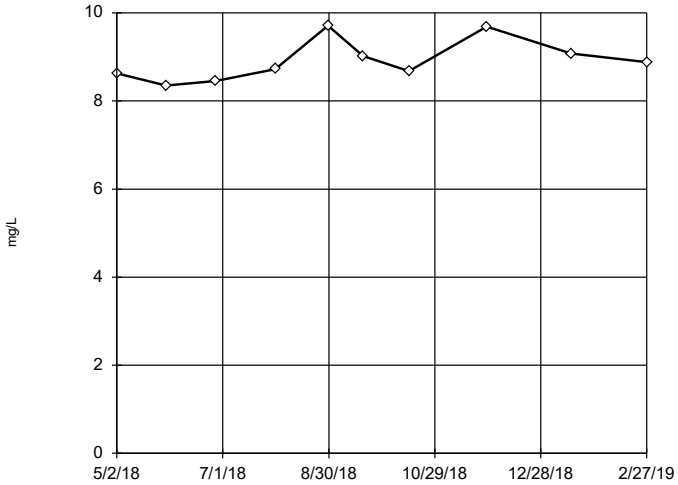
Outlier Analysis - All Results

Northeastern Landfill Client: Geosyntec Data: Northeastern LF Printed 12/30/2019, 4:35 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Boron (mg/L)	MW-12D	No	n/a	n/a	NP	10	8.921	0.4692	ln(x)	ShapiroWilk
Boron (mg/L)	MW-15	No	n/a	n/a	NP	17	9.354	0.5351	x^6	ShapiroWilk
Boron (mg/L)	**MW-3D**	**Yes**	**1.56**	**5/7/2019**	**NP**	**19**	**0.9402**	**0.1666**	**ln(x)**	**ShapiroWilk**
Boron (mg/L)	MW-4D	No	n/a	n/a	NP	10	1.155	0.2021	x^4	ShapiroWilk
Boron (mg/L)	MW-5D	No	n/a	n/a	NP	10	0.4999	0.0522	ln(x)	ShapiroWilk
Boron (mg/L)	MW-6D	No	n/a	n/a	NP	14	3.433	0.8127	x^4	ShapiroWilk
Boron (mg/L)	MW-9D	No	n/a	n/a	NP	12	7.113	0.3636	sqrt(x)	ShapiroWilk
Calcium (mg/L)	MW-12D	No	n/a	n/a	NP	11	99.13	36.52	ln(x)	ShapiroWilk
Calcium (mg/L)	MW-15	No	n/a	n/a	NP	17	97.79	44.12	ln(x)	ShapiroWilk
Calcium (mg/L)	**MW-3D**	**Yes**	**194**	**6/28/2017**	**NP**	**17**	**136.6**	**19.71**	**ln(x)**	**ShapiroWilk**
Calcium (mg/L)	MW-4D	No	n/a	n/a	NP	11	186.6	12.32	normal	ShapiroWilk
Calcium (mg/L)	MW-5D	No	n/a	n/a	NP	11	141.5	11.16	ln(x)	ShapiroWilk
Calcium (mg/L)	MW-6D	No	n/a	n/a	NP	14	215.5	53.67	ln(x)	ShapiroWilk
Calcium (mg/L)	MW-9D	No	n/a	n/a	NP	11	272.3	72.4	normal	ShapiroWilk
Chloride (mg/L)	**MW-12D**	**Yes**	**91**	**5/30/2018**	**NP**	**11**	**24.71**	**22.12**	**ln(x)**	**ShapiroWilk**
Chloride (mg/L)	MW-15	No	n/a	n/a	NP	16	33.57	26.35	ln(x)	ShapiroWilk
Chloride (mg/L)	**MW-3D**	**Yes**	**23**	**8/17/2017**	**NP**	**17**	**13.53**	**2.759**	**ln(x)**	**ShapiroWilk**
Chloride (mg/L)	MW-4D	No	n/a	n/a	NP	11	28.14	6.715	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-5D	No	n/a	n/a	NP	10	27.02	2.813	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-6D	No	n/a	n/a	NP	13	30.2	1.631	x^5	ShapiroWilk
Chloride (mg/L)	MW-9D	No	n/a	n/a	NP	11	153.8	98.22	x^(1/3)	ShapiroWilk
Fluoride (mg/L)	MW-12D	No	n/a	n/a	NP	11	2.38	0.3701	ln(x)	ShapiroWilk
Fluoride (mg/L)	MW-15	No	n/a	n/a	NP	17	1.854	0.3807	x^3	ShapiroWilk
Fluoride (mg/L)	MW-3D	No	n/a	n/a	NP	18	0.885	0.1398	sqrt(x)	ShapiroWilk
Fluoride (mg/L)	MW-4D	No	n/a	n/a	NP	11	0.7659	0.326	ln(x)	ShapiroWilk
Fluoride (mg/L)	MW-5D	No	n/a	n/a	NP	10	0.663	0.1974	x^4	ShapiroWilk
Fluoride (mg/L)	MW-6D	No	n/a	n/a	NP	15	0.8518	0.17	ln(x)	ShapiroWilk
Fluoride (mg/L)	MW-9D	No	n/a	n/a	NP	11	0.9846	0.496	ln(x)	ShapiroWilk
pH, field (SU)	MW-12D	No	n/a	n/a	NP	11	8.458	0.6272	x^2	ShapiroWilk
pH, field (SU)	MW-15	No	n/a	n/a	NP	16	7.86	0.5058	x^2	ShapiroWilk
pH, field (SU)	MW-3D	No	n/a	n/a	NP	16	7.229	0.4188	ln(x)	ShapiroWilk
pH, field (SU)	MW-4D	No	n/a	n/a	NP	11	7.674	0.3443	x^6	ShapiroWilk
pH, field (SU)	MW-5D	No	n/a	n/a	NP	11	7.907	0.3798	x^6	ShapiroWilk
pH, field (SU)	MW-6D	No	n/a	n/a	NP	15	7.215	0.3877	x^3	ShapiroWilk
pH, field (SU)	MW-9D	No	n/a	n/a	NP	12	7.249	0.1985	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-12D	No	n/a	n/a	NP	11	560.3	57.71	x^2	ShapiroWilk
Sulfate (mg/L)	MW-15	No	n/a	n/a	NP	16	575.5	29.3	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-3D	No	n/a	n/a	NP	17	207.8	17.87	x^6	ShapiroWilk
Sulfate (mg/L)	MW-4D	No	n/a	n/a	NP	12	320.5	72.8	ln(x)	ShapiroWilk
Sulfate (mg/L)	**MW-5D**	**Yes**	**662**	**7/31/2018**	**NP**	**11**	**183.2**	**159.3**	**ln(x)**	**ShapiroWilk**
Sulfate (mg/L)	MW-6D	No	n/a	n/a	NP	14	495.6	42.92	x^6	ShapiroWilk
Sulfate (mg/L)	MW-9D	No	n/a	n/a	NP	11	979.9	261.3	x^4	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-12D	No	n/a	n/a	NP	10	1062	34.19	ln(x)	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-15	No	n/a	n/a	NP	16	1083	33.69	x^4	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-3D	No	n/a	n/a	NP	17	711.3	54.08	ln(x)	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-4D	No	n/a	n/a	NP	10	876.4	79.39	x^4	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-5D	No	n/a	n/a	NP	9	636.2	17.01	ln(x)	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-6D	No	n/a	n/a	NP	14	1058	53.48	ln(x)	ShapiroWilk
Total Dissolved Solids [TDS] (mg/L)	MW-9D	No	n/a	n/a	NP	11	1963	598.2	x^3	ShapiroWilk

Tukey's Outlier Screening

MW-12D



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 12.43, low cutoff = 6.443, based on IQR multiplier of 3.

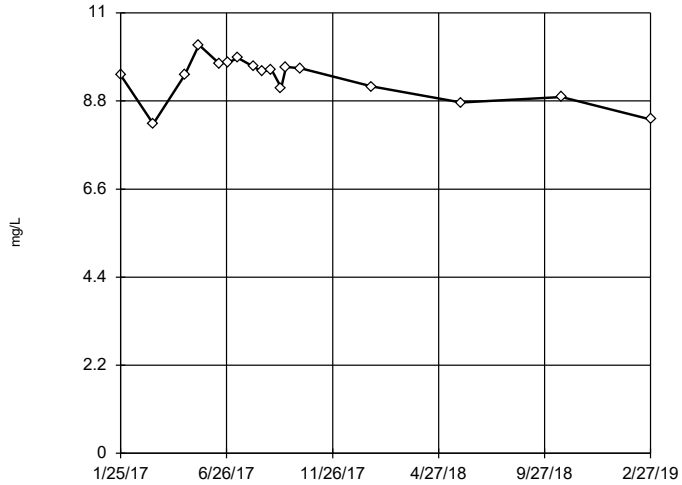
Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-15



n = 17

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 10.94, low cutoff = -8.384, based on IQR multiplier of 3.

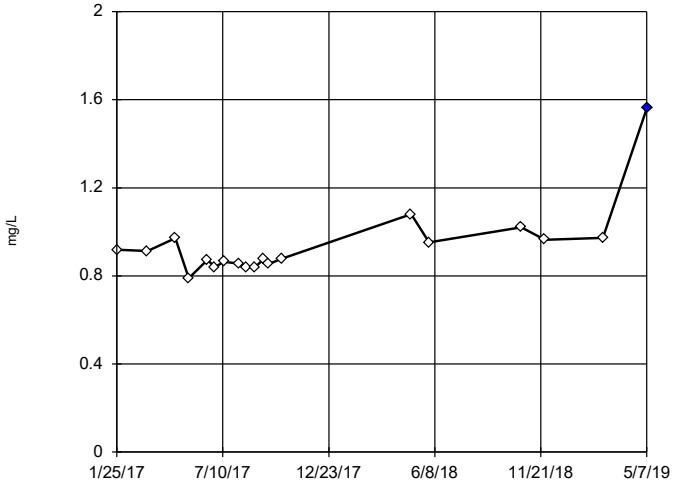
Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-3D



n = 19

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.438, low cutoff = 0.5765, based on IQR multiplier of 3.

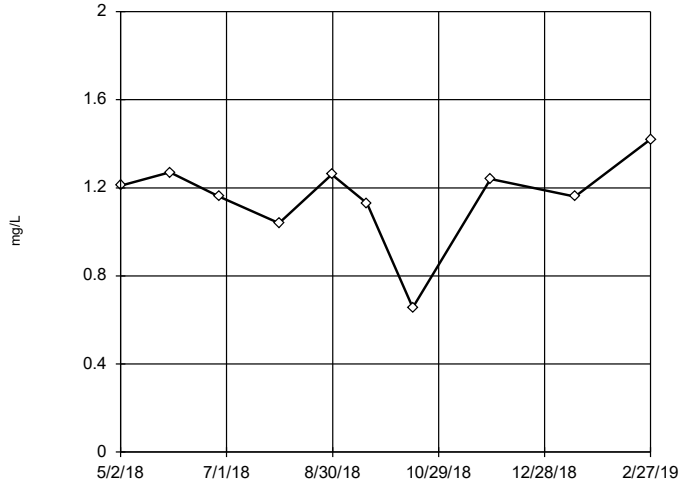
Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-4D



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

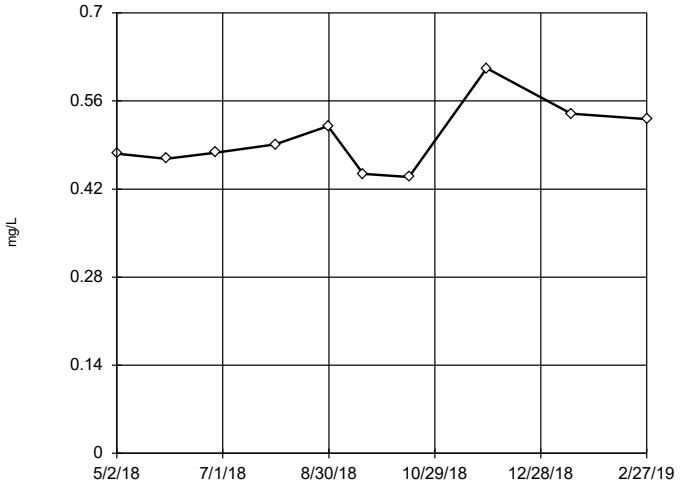
High cutoff = 1.568, low cutoff = -1.201, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-5D



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.868, low cutoff = 0.2812, based on IQR multiplier of 3.

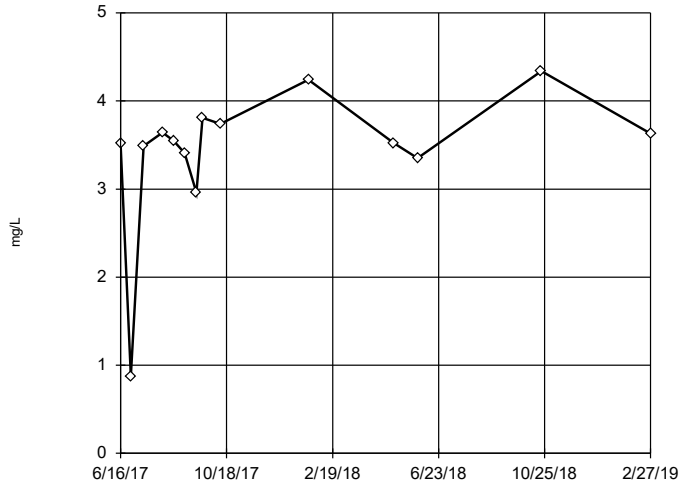
Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-6D



n = 14

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.53, low cutoff = -3.056, based on IQR multiplier of 3.

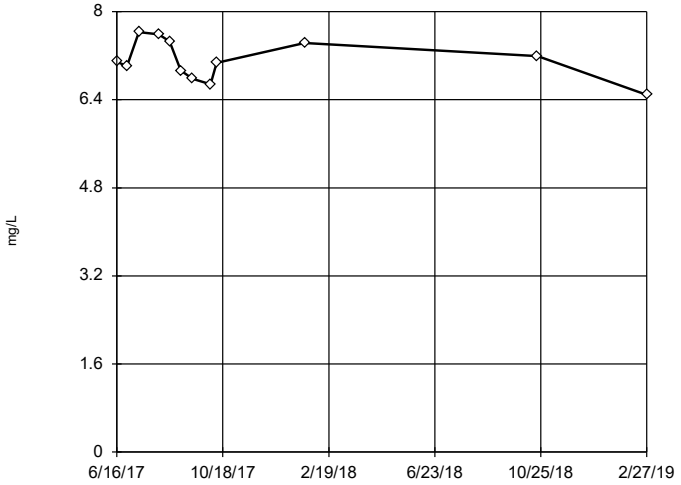
Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-9D



n = 12

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.362, low cutoff = 5.23, based on IQR multiplier of 3.

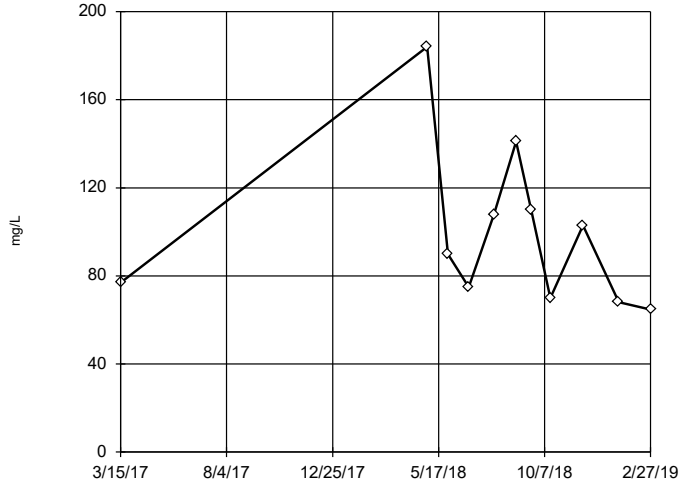
Constituent: Boron Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-12D



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

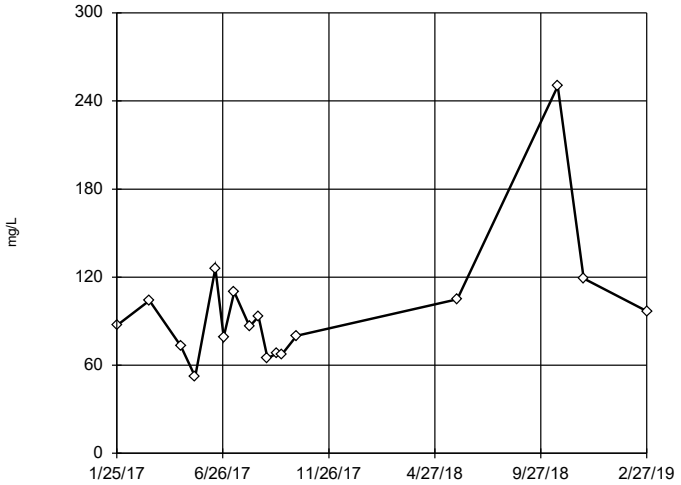
High cutoff = 426.9, low cutoff = 18.04, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-15



n = 17

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 380.6, low cutoff = 19.91, based on IQR multiplier of 3.

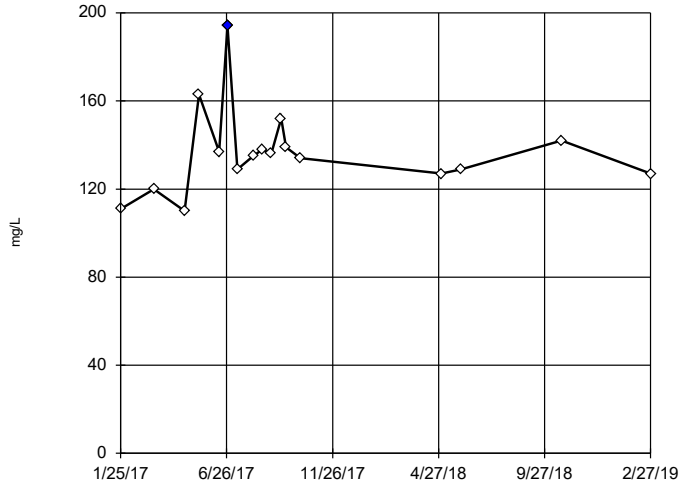
Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-3D



n = 17

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 190.2, low cutoff = 93.81, based on IQR multiplier of 3.

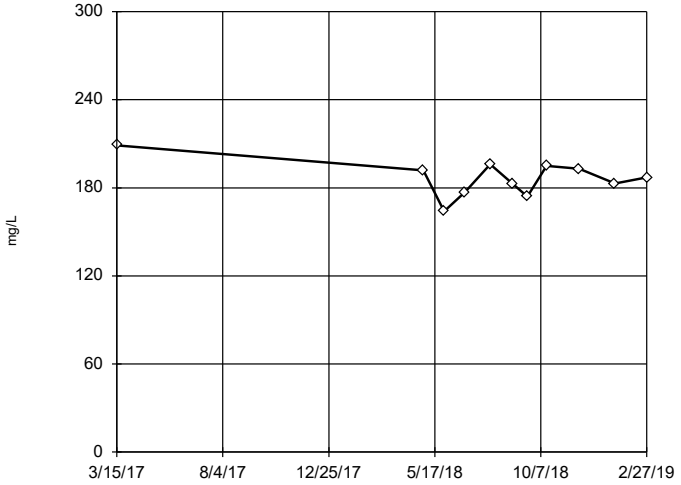
Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-4D



n = 11

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 249, low cutoff = 123, based on IQR multiplier of 3.

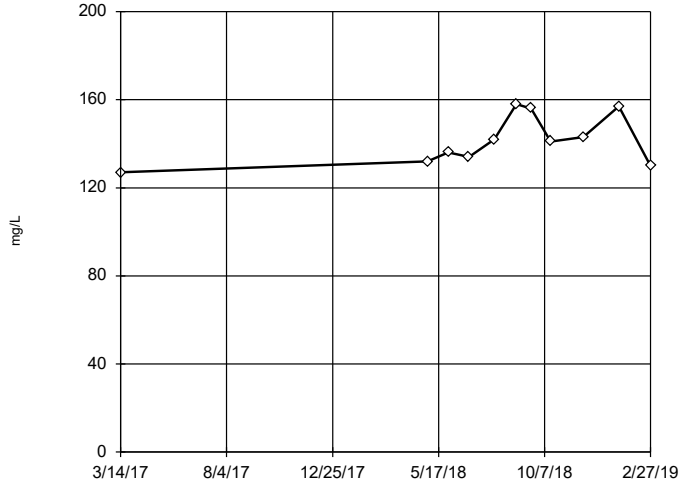
Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-5D



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

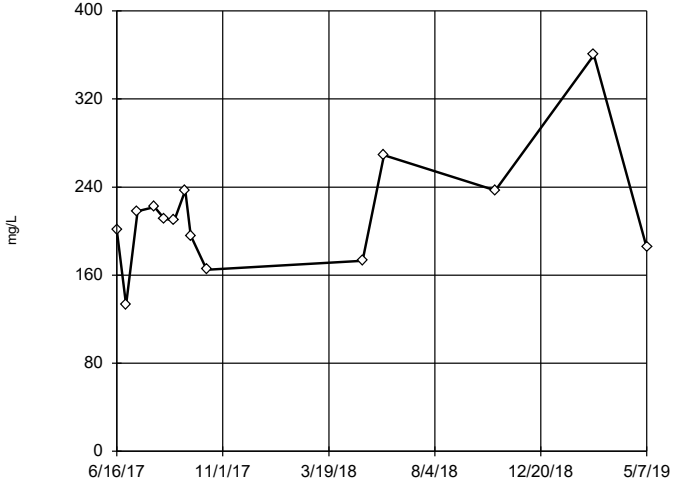
High cutoff = 257.5, low cutoff = 79.97, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-6D



n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 551, low cutoff = 76.95, based on IQR multiplier of 3.

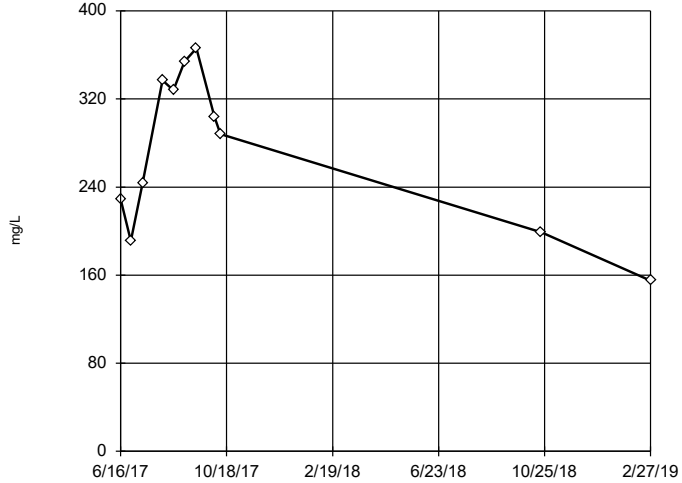
Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-9D



n = 11

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 751, low cutoff = -215, based on IQR multiplier of 3.

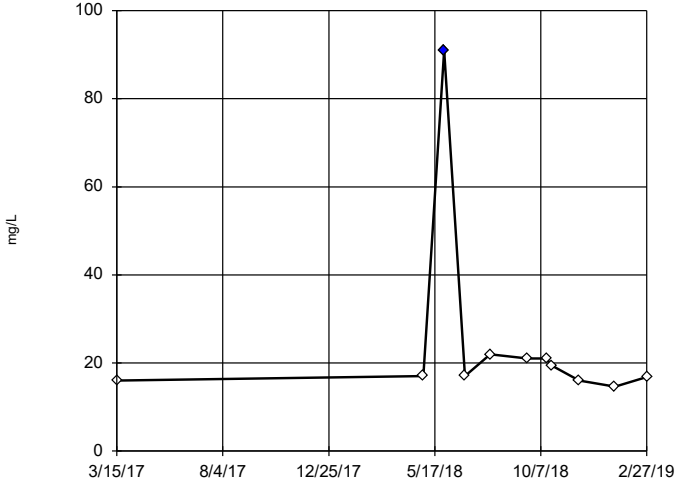
Constituent: Calcium Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-12D



n = 11

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 47.48, low cutoff = 7.077, based on IQR multiplier of 3.

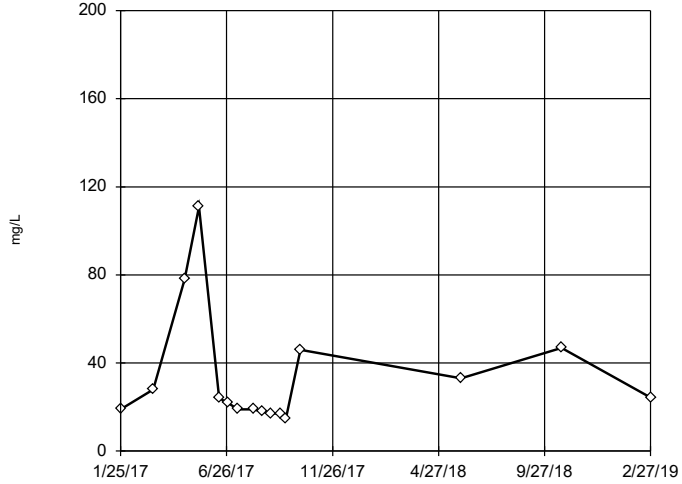
Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-15



n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

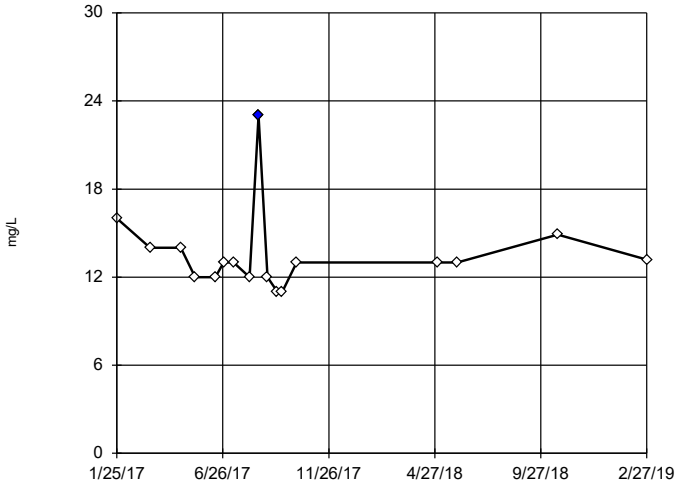
High cutoff = 364.3, low cutoff = 1.978, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-3D



n = 17

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 22.23, low cutoff = 7.557, based on IQR multiplier of 3.

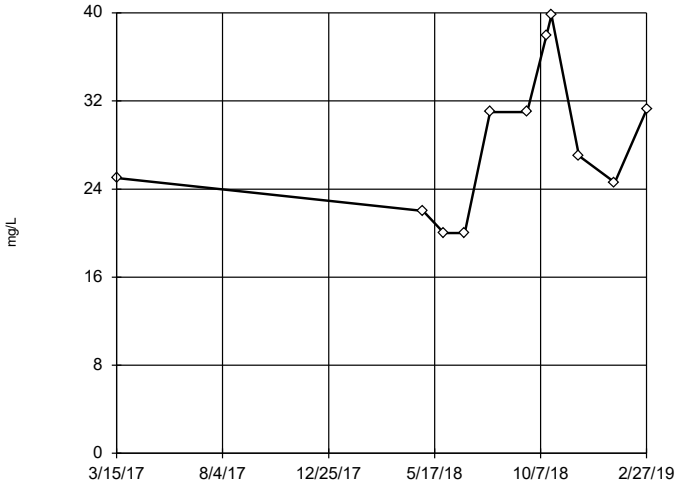
Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-4D



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 88.99, low cutoff = 7.713, based on IQR multiplier of 3.

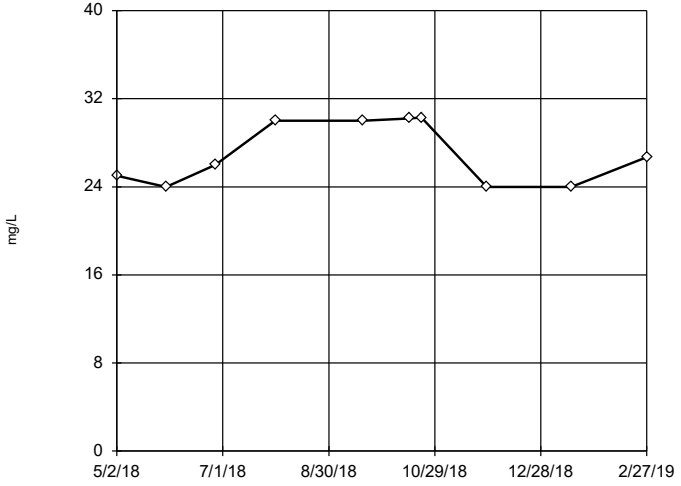
Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-5D



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 59.38, low cutoff = 12.17, based on IQR multiplier of 3.

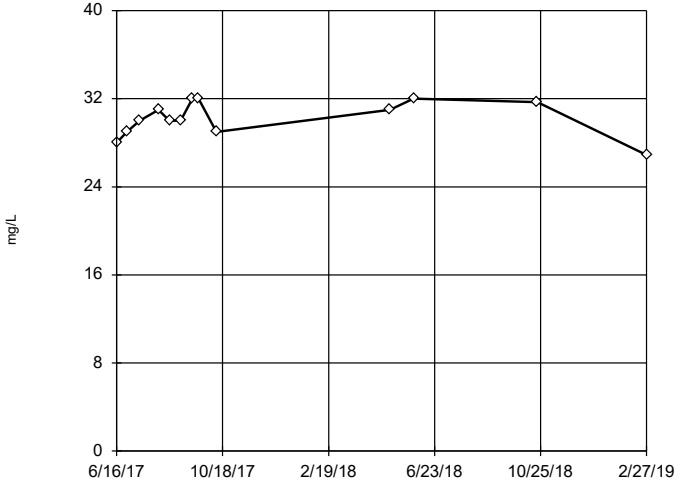
Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-6D



n = 13

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

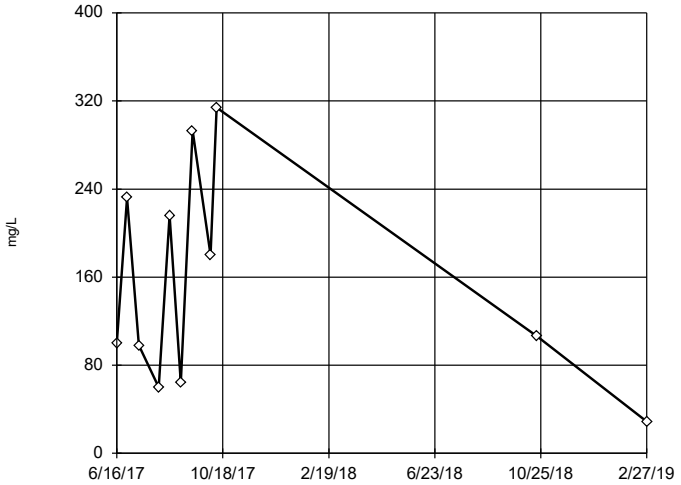
High cutoff = 37.01, low cutoff = -27.65, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-9D



n = 11

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1990, low cutoff = -14.42, based on IQR multiplier of 3.

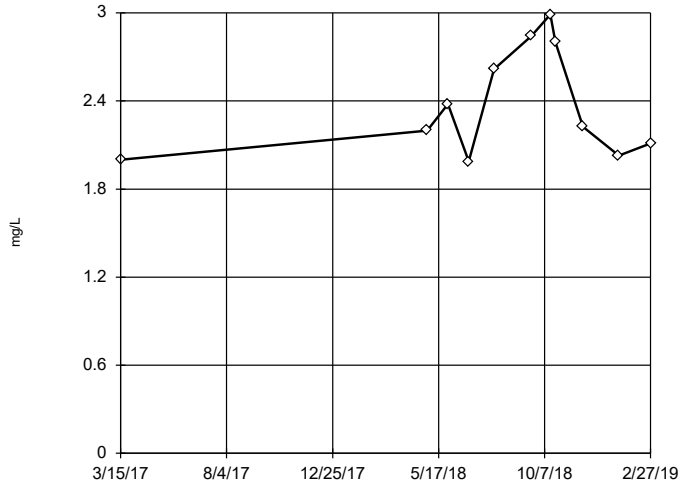
Constituent: Chloride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-12D



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 7.369, low cutoff = 0.7705, based on IQR multiplier of 3.

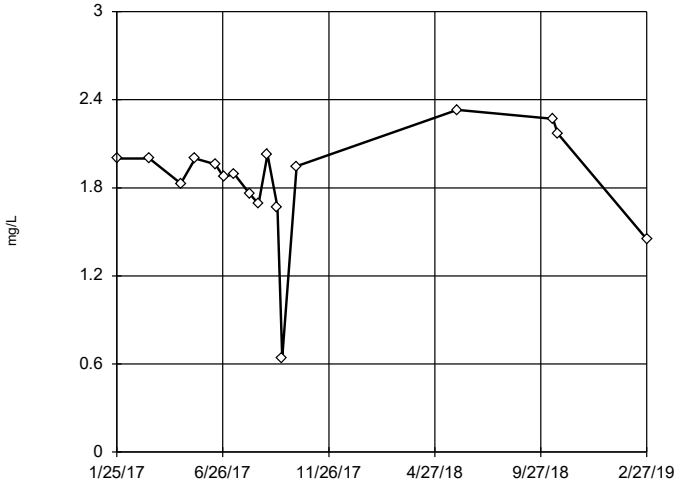
Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-15



n = 17

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.586, low cutoff = -1.584, based on IQR multiplier of 3.

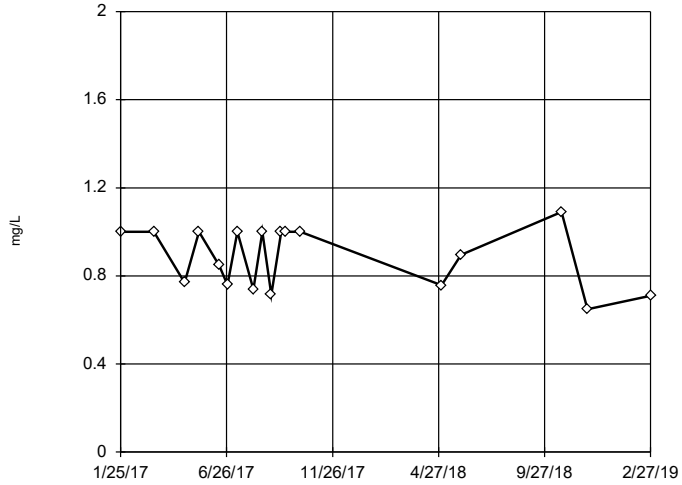
Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-3D



n = 18

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

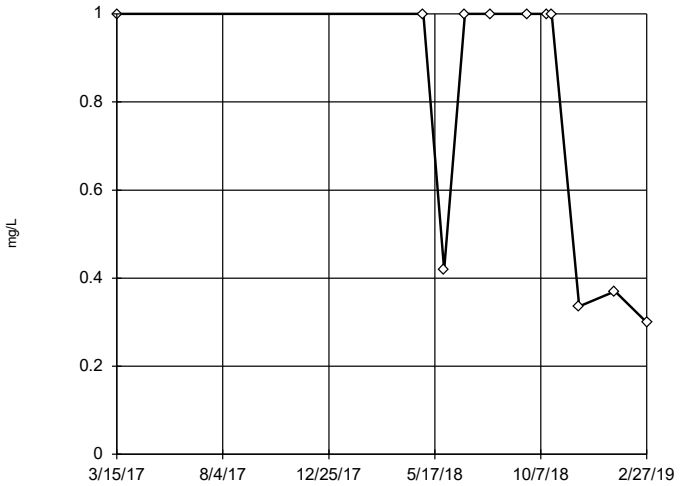
High cutoff = 1.977, low cutoff = 0.2101, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-4D



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 19.74, low cutoff = 0.01874, based on IQR multiplier of 3.

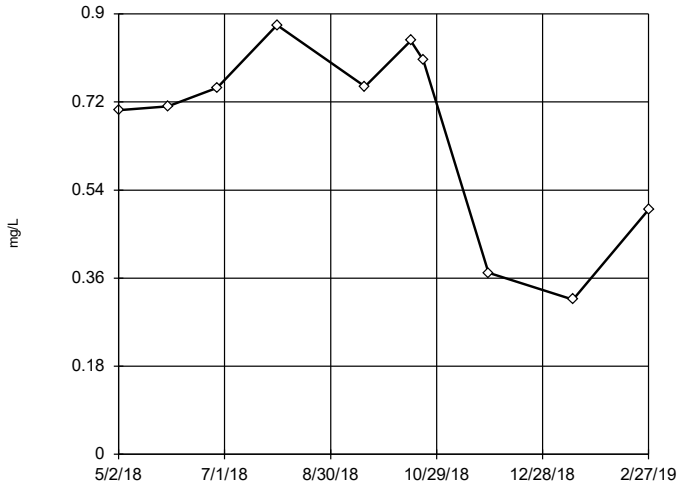
Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-5D



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.149, low cutoff = -1.054, based on IQR multiplier of 3.

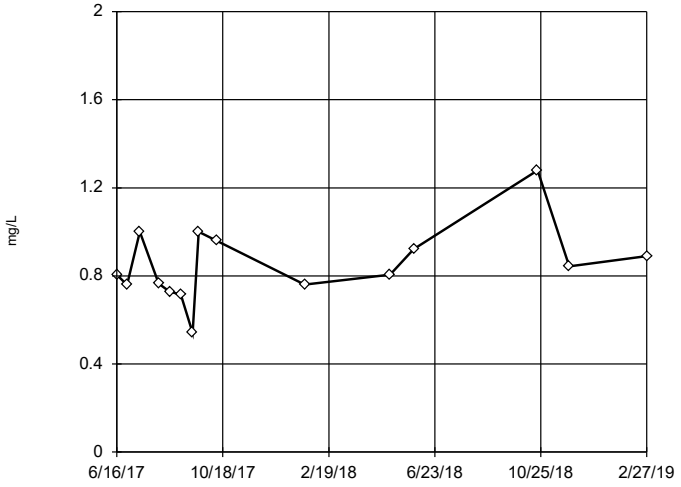
Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-6D



n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.935, low cutoff = 0.3766, based on IQR multiplier of 3.

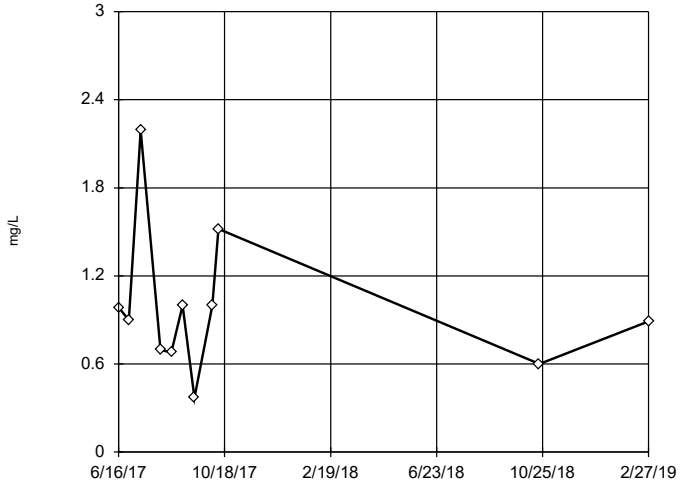
Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-9D



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

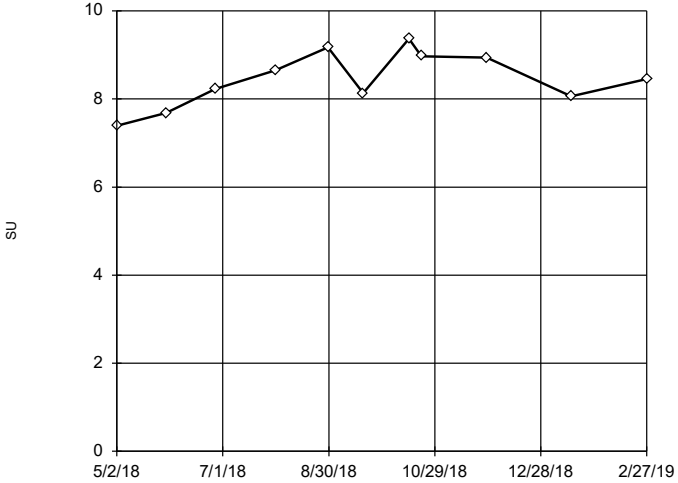
High cutoff = 3.166, low cutoff = 0.2151, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-12D



n = 11

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 11.27, low cutoff = 4.298, based on IQR multiplier of 3.

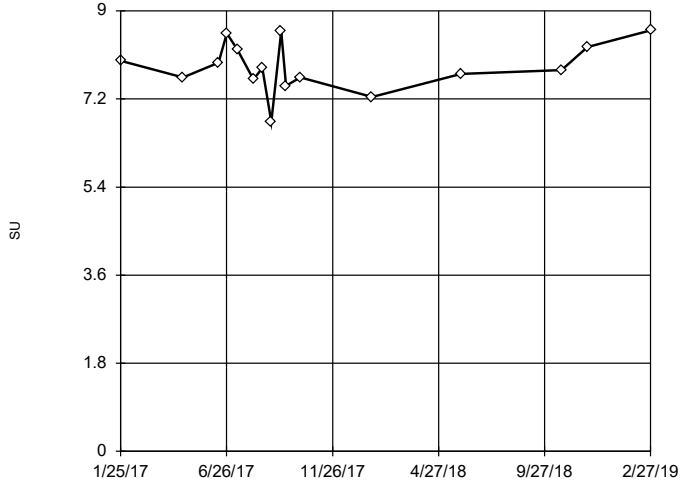
Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-15



n = 16

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.852, low cutoff = 5.368, based on IQR multiplier of 3.

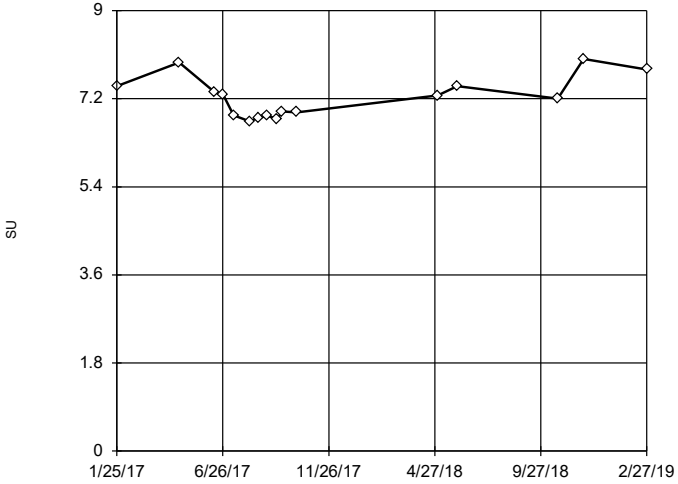
Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-3D



n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.615, low cutoff = 5.319, based on IQR multiplier of 3.

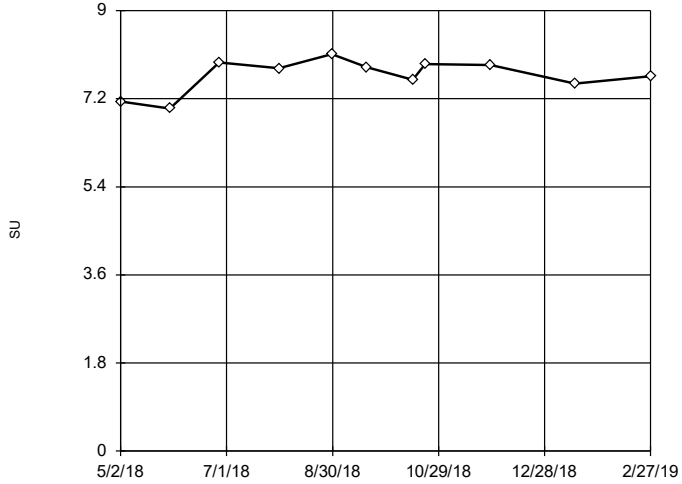
Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-4D



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

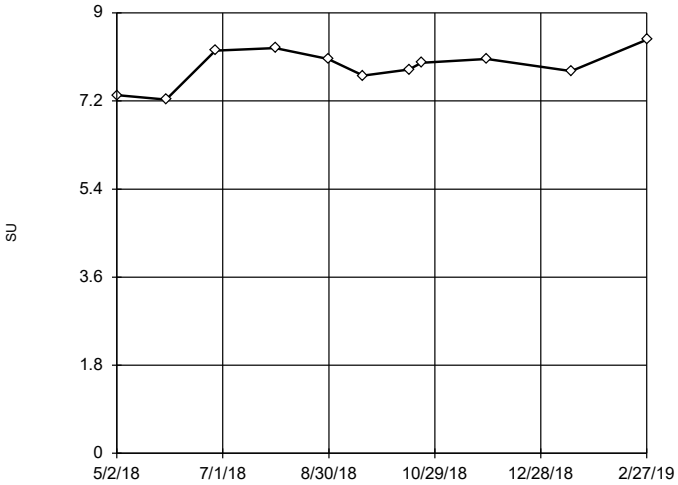
High cutoff = 8.726, low cutoff = -5.08, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-5D



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.204, low cutoff = -6.637, based on IQR multiplier of 3.

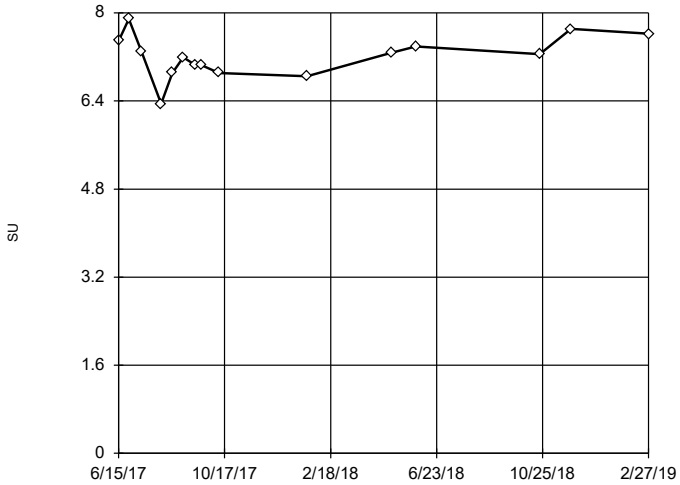
Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-6D



n = 15

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.841, low cutoff = 3.897, based on IQR multiplier of 3.

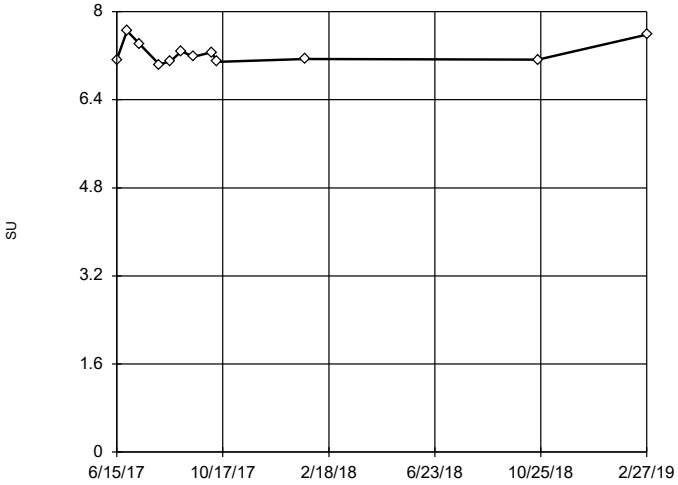
Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-9D



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.079, low cutoff = 6.468, based on IQR multiplier of 3.

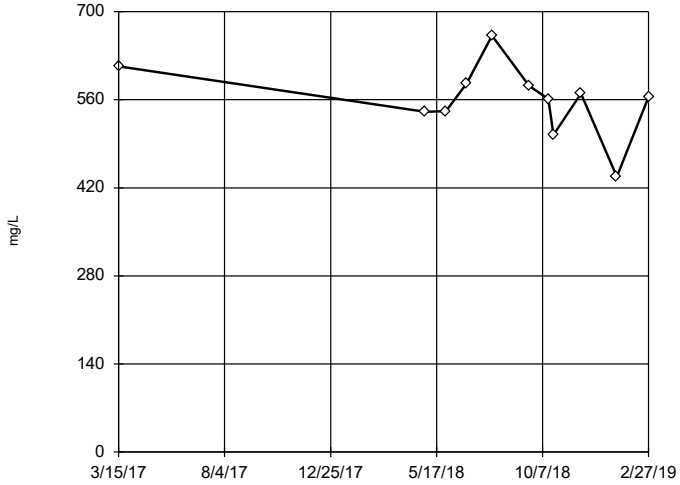
Constituent: pH, field Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-12D



n = 11

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

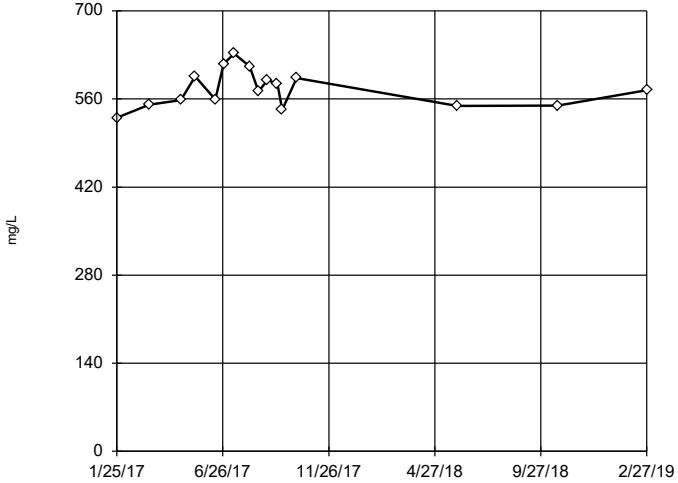
High cutoff = 703.9, low cutoff = 374.9, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-15



n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 749.8, low cutoff = 436.2, based on IQR multiplier of 3.

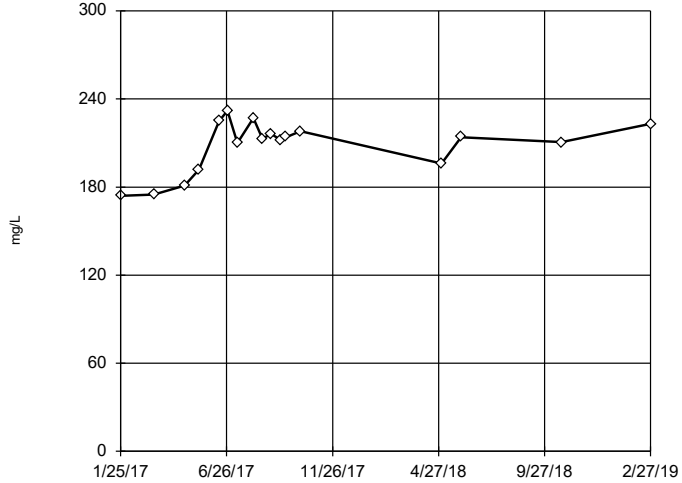
Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-3D



n = 17

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 258.8, low cutoff = -225.6, based on IQR multiplier of 3.

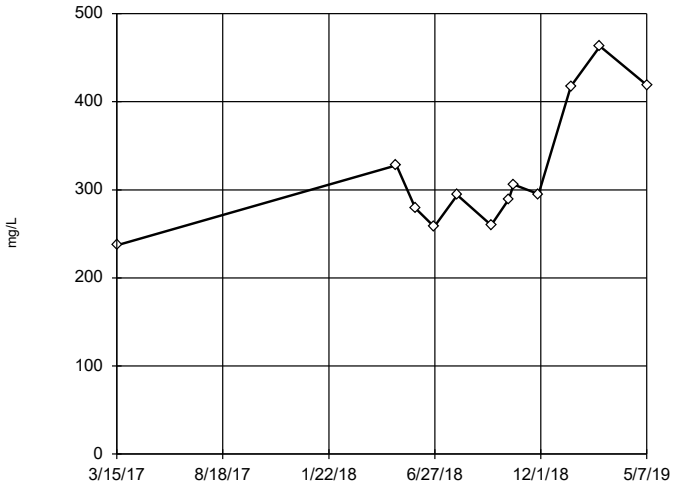
Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-4D



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 960.3, low cutoff = 103.8, based on IQR multiplier of 3.

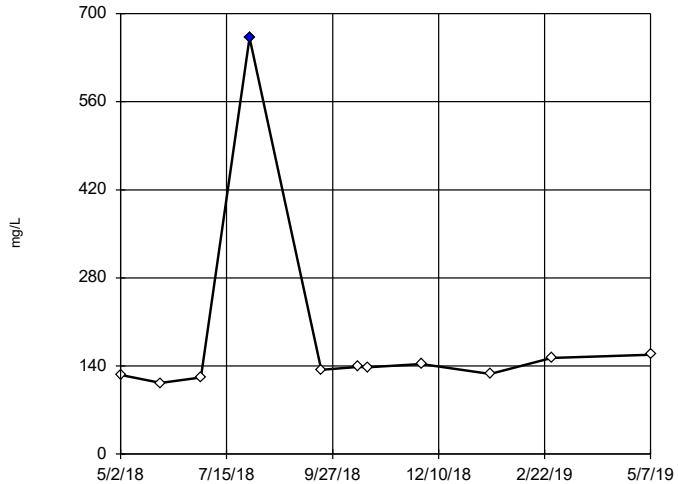
Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-5D



n = 11

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

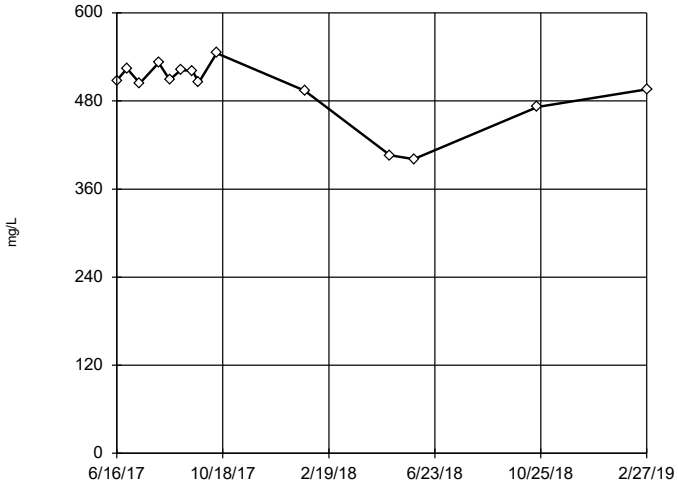
High cutoff = 273.9, low cutoff = 70.37, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-6D



n = 14

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 593.1, low cutoff = -466.2, based on IQR multiplier of 3.

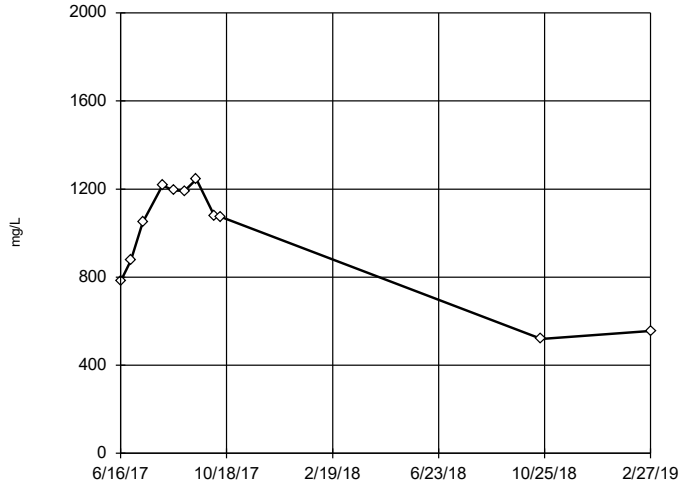
Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-9D



n = 11

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1626, low cutoff = -1464, based on IQR multiplier of 3.

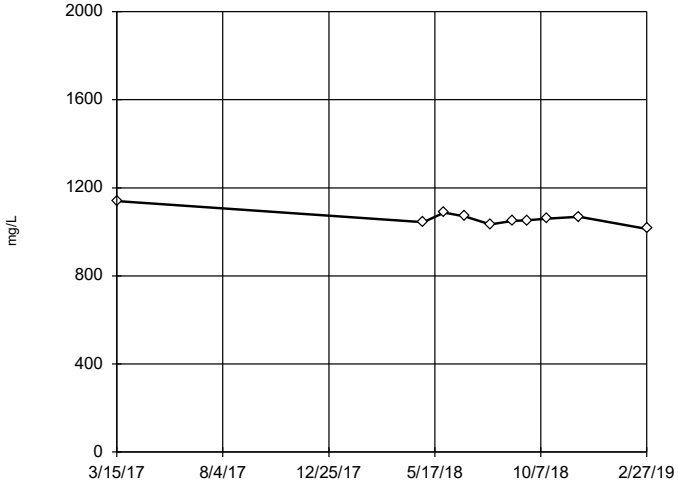
Constituent: Sulfate Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-12D



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1208, low cutoff = 927.7, based on IQR multiplier of 3.

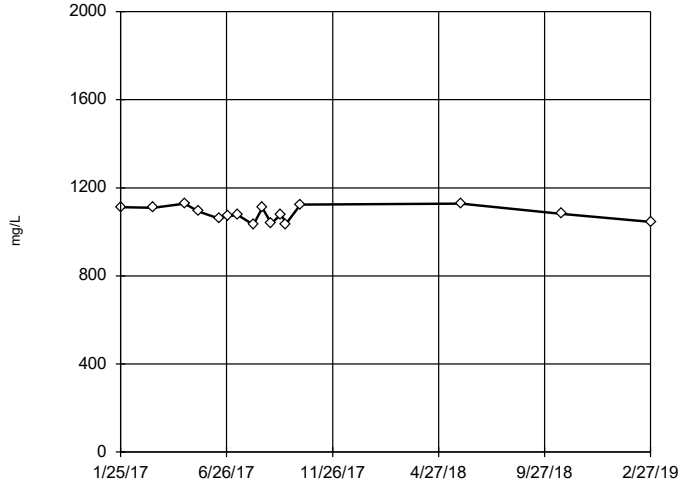
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-15



n = 16

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

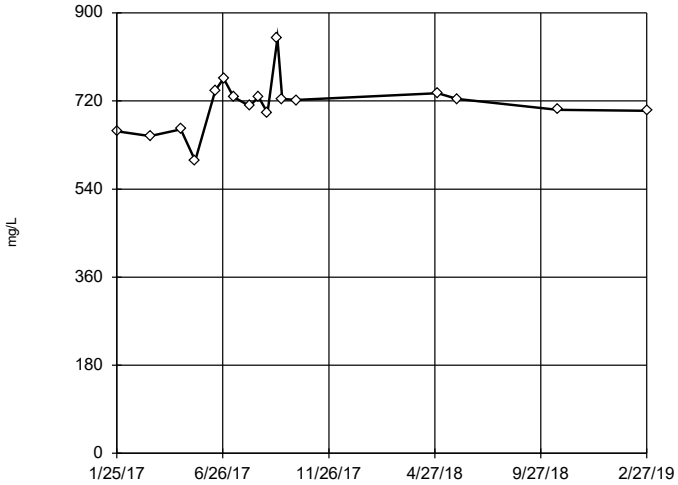
High cutoff = 1245, low cutoff = 768.3, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-3D



n = 17

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 917.9, low cutoff = 541.3, based on IQR multiplier of 3.

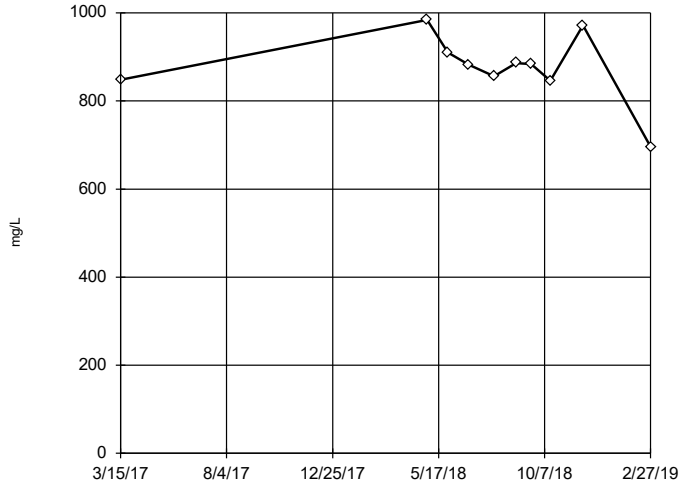
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-4D



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1127, low cutoff = -745.5, based on IQR multiplier of 3.

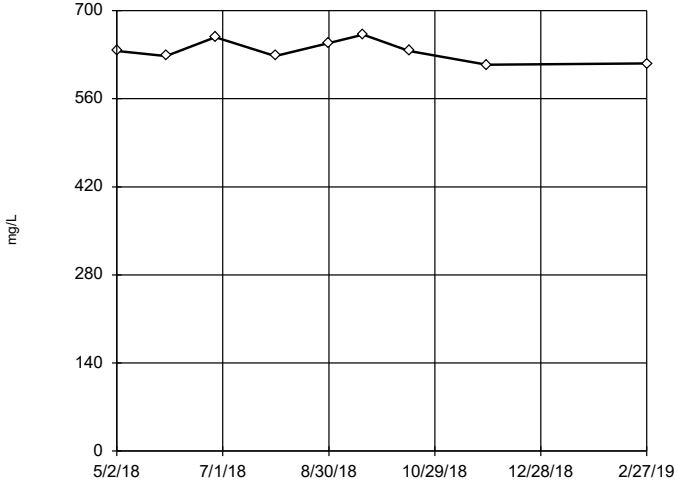
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-5D



n = 9

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 755.6, low cutoff = 537.5, based on IQR multiplier of 3.

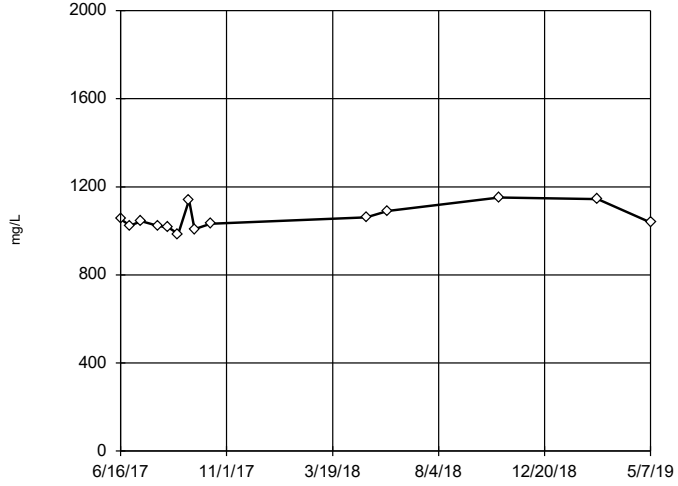
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-6D



n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

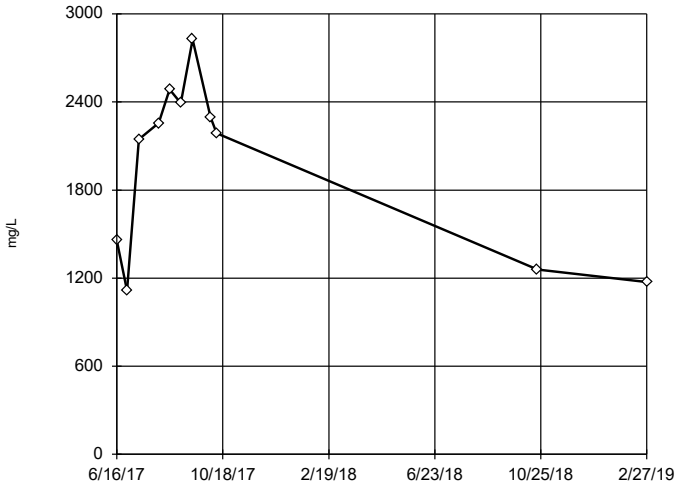
High cutoff = 1459, low cutoff = 778.4, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Tukey's Outlier Screening

MW-9D



n = 11

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 3654, low cutoff = -3211, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:32 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Welch's t-test/Mann-Whitney - Significant Results

Northeastern Landfill Client: Geosyntec Data: Northeastern LF Printed 12/30/2019, 4:18 PM

Constituent	Well	Calc.	0.01	Method
Boron (mg/L)	**MW-3D**	**2.858**	**Yes**	**Mann-W**

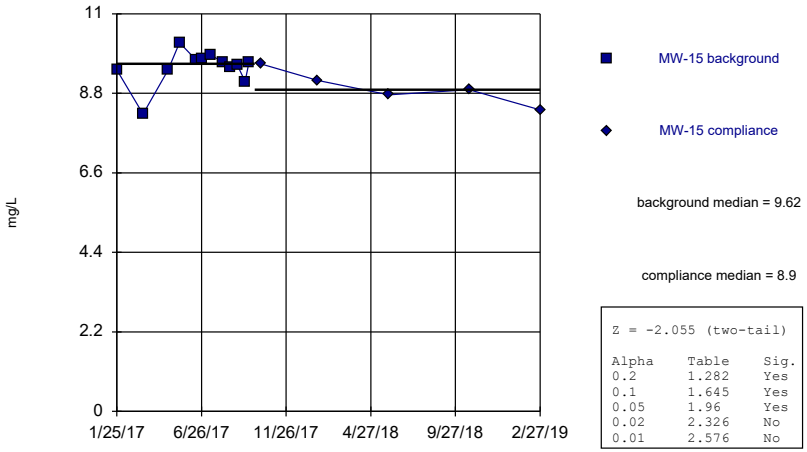
Welch's t-test/Mann-Whitney - All Results

Northeastern Landfill Client: Geosyntec Data: Northeastern LF Printed 12/30/2019, 4:18 PM

Constituent	Well	Calc.	0.01	Method
Boron (mg/L)	MW-15	-2.055	No	Mann-W
Boron (mg/L)	**MW-3D**	**2.858**	**Yes**	**Mann-W**
Boron (mg/L)	MW-6D	1.485	No	Mann-W
Boron (mg/L)	MW-9D	-0.4246	No	Mann-W
Calcium (mg/L)	MW-15	1.845	No	Mann-W
Calcium (mg/L)	MW-3D	-0.8443	No	Mann-W
Calcium (mg/L)	MW-6D	0.2585	No	Mann-W
Calcium (mg/L)	MW-9D	-1.735	No	Mann-W
Chloride (mg/L)	MW-15	1.765	No	Mann-W
Chloride (mg/L)	MW-3D	1.277	No	Mann-W
Chloride (mg/L)	MW-6D	-0.07422	No	Mann-W
Chloride (mg/L)	MW-9D	-0.1021	No	Mann-W
Fluoride (mg/L)	MW-15	1.427	No	Mann-W
Fluoride (mg/L)	MW-3D	-0.882	No	Mann-W
Fluoride (mg/L)	MW-6D	1.564	No	Mann-W
Fluoride (mg/L)	MW-9D	-0.3069	No	Mann-W
pH, field (SU)	MW-15	0	No	Mann-W
pH, field (SU)	MW-3D	1.52	No	Mann-W
pH, field (SU)	MW-6D	0.4637	No	Mann-W
pH, field (SU)	MW-9D	-0.5104	No	Mann-W
Sulfate (mg/L)	MW-15	-0.7882	No	Mann-W
Sulfate (mg/L)	MW-3D	0.4219	No	Mann-W
Sulfate (mg/L)	MW-6D	-2.13	No	Mann-W
Sulfate (mg/L)	MW-9D	-1.939	No	Mann-W
Total Dissolved Solids [TDS] (mg/L)	MW-15	0.9716	No	Mann-W
Total Dissolved Solids [TDS] (mg/L)	MW-3D	0.1055	No	Mann-W
Total Dissolved Solids [TDS] (mg/L)	MW-6D	2.001	No	Mann-W
Total Dissolved Solids [TDS] (mg/L)	MW-9D	-1.531	No	Mann-W

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



Z = -2.055 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	Yes
0.02	2.326	No
0.01	2.576	No

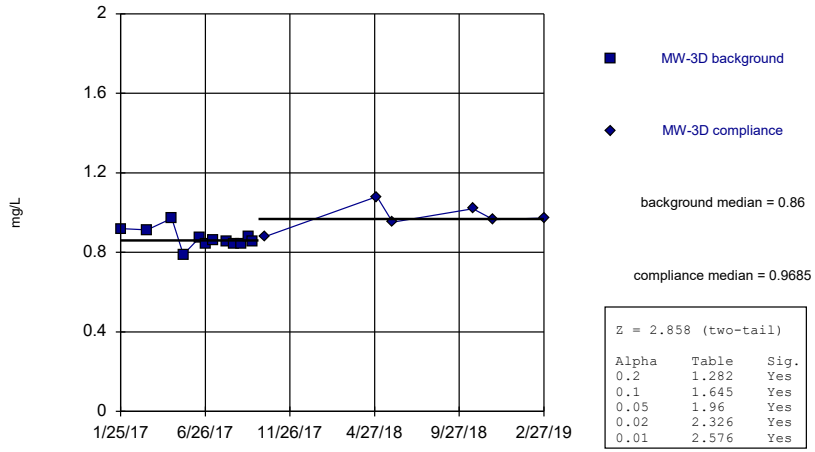
Constituent: Boron Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



Z = 2.858 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	Yes
0.02	2.326	Yes
0.01	2.576	Yes

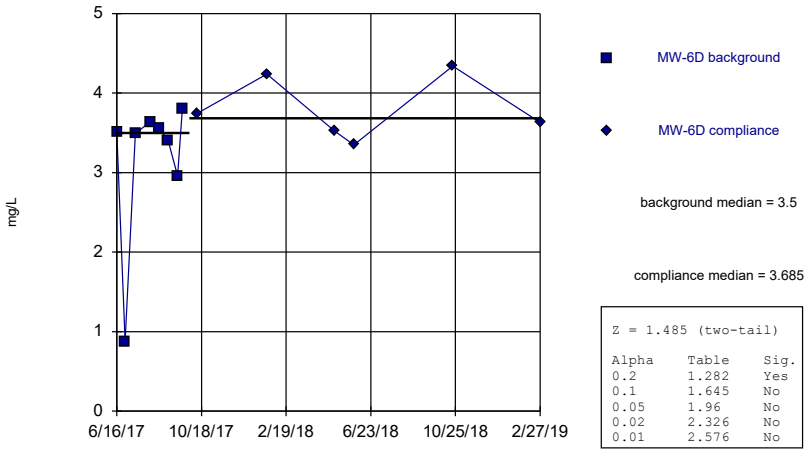
Constituent: Boron Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



Z = 1.485 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

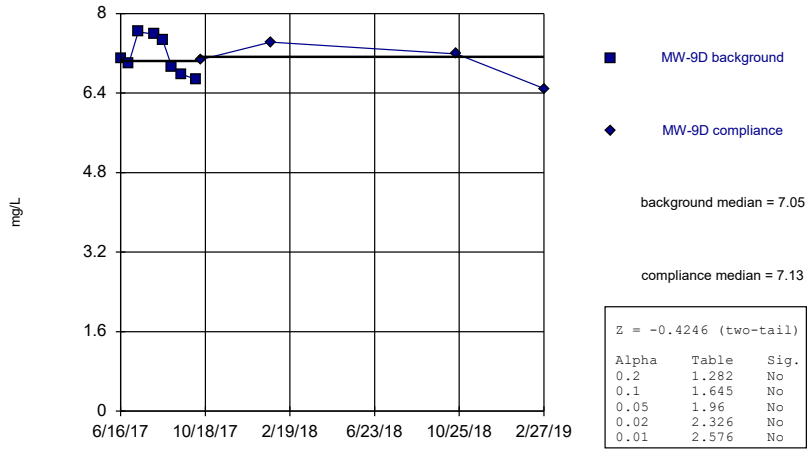
Constituent: Boron Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D



Z = -0.4246 (two-tail)

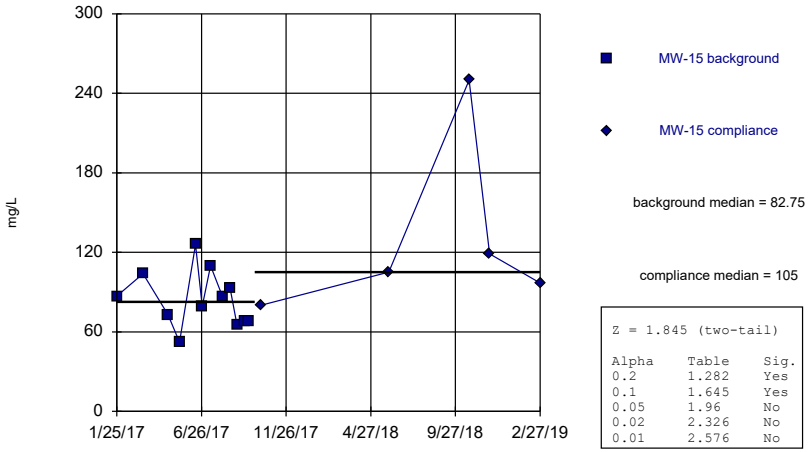
Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: Boron Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



Z = 1.845 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

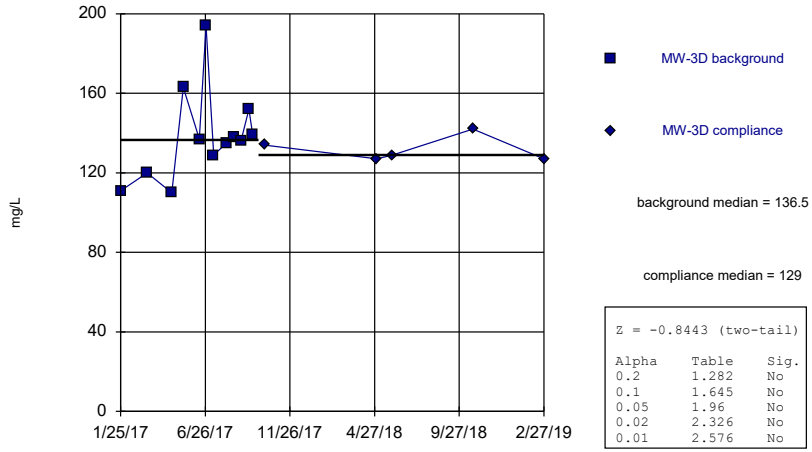
Constituent: Calcium Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



Z = -0.8443 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

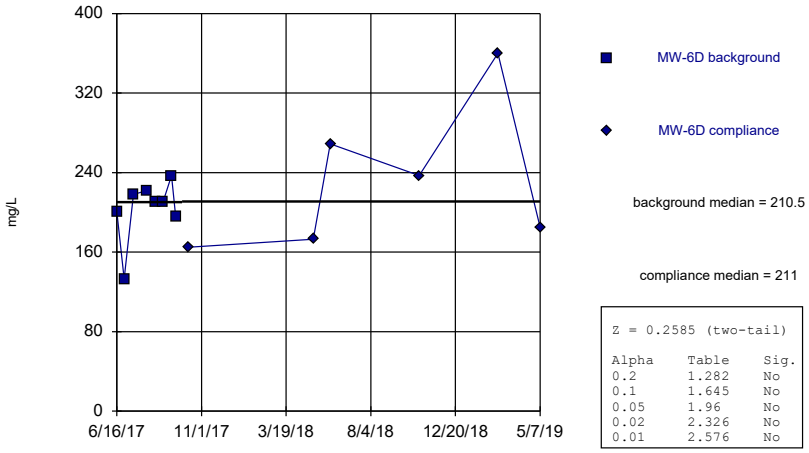
Constituent: Calcium Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



Z = 0.2585 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

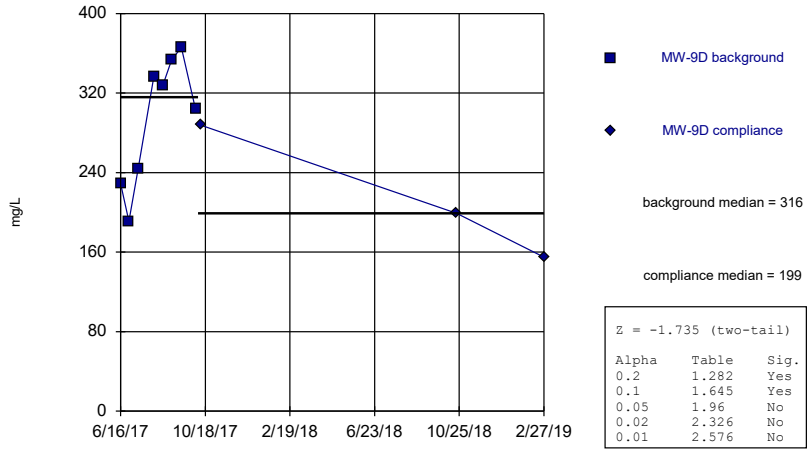
Constituent: Calcium Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D



Z = -1.735 (two-tail)

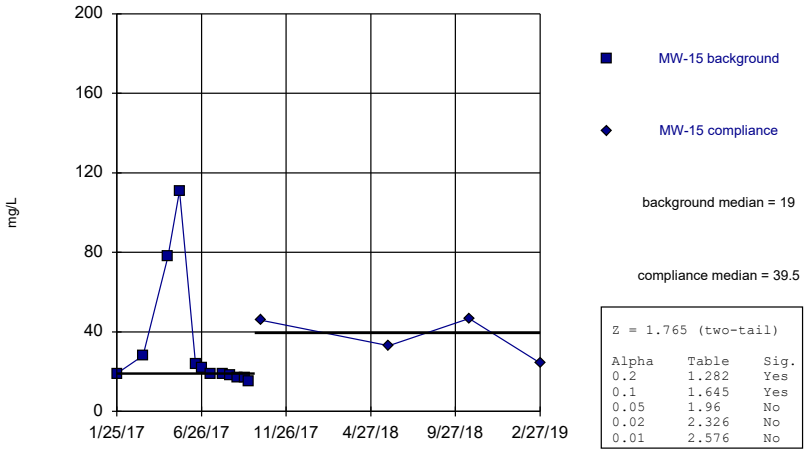
Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: Calcium Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



background median = 19

compliance median = 39.5

Z = 1.765 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

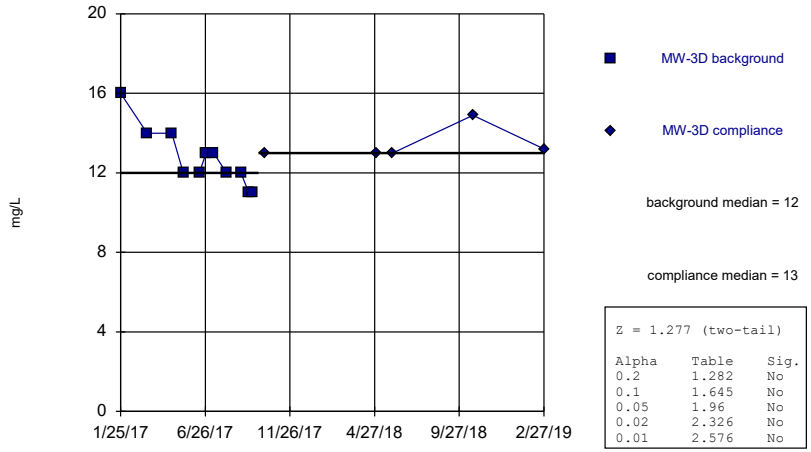
Constituent: Chloride Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



background median = 12

compliance median = 13

Z = 1.277 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

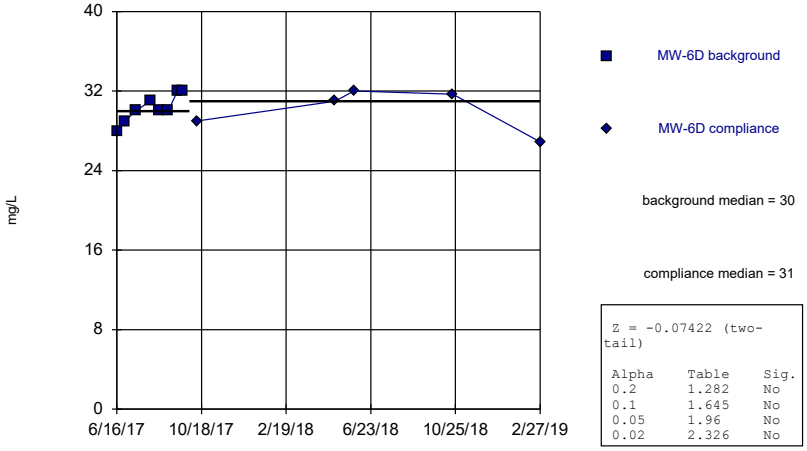
Constituent: Chloride Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



background median = 30

compliance median = 31

Z = -0.07422 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No

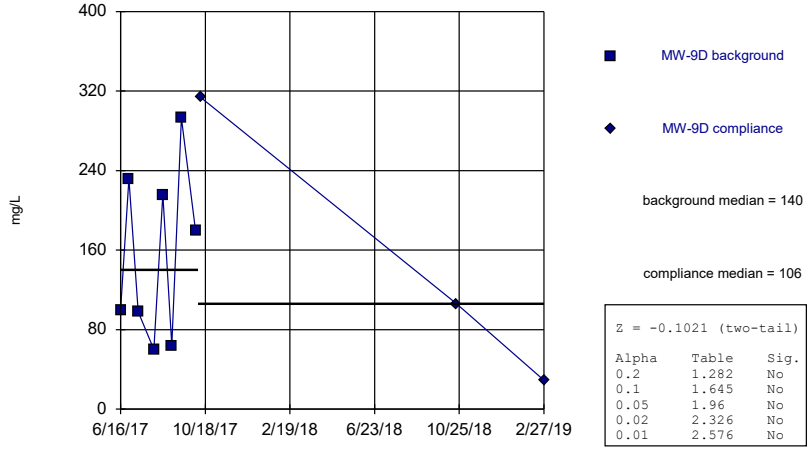
Constituent: Chloride Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D



background median = 140

compliance median = 106

Z = -0.1021 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

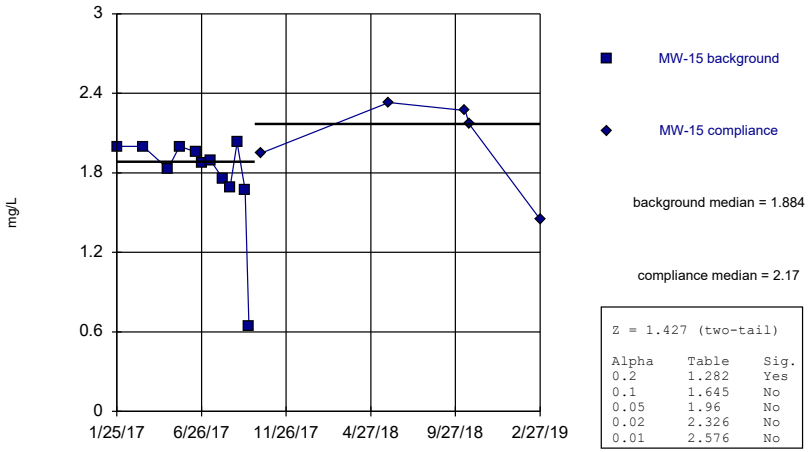
Constituent: Chloride Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



Constituent: Fluoride Analysis Run 12/30/2019 4:16 PM

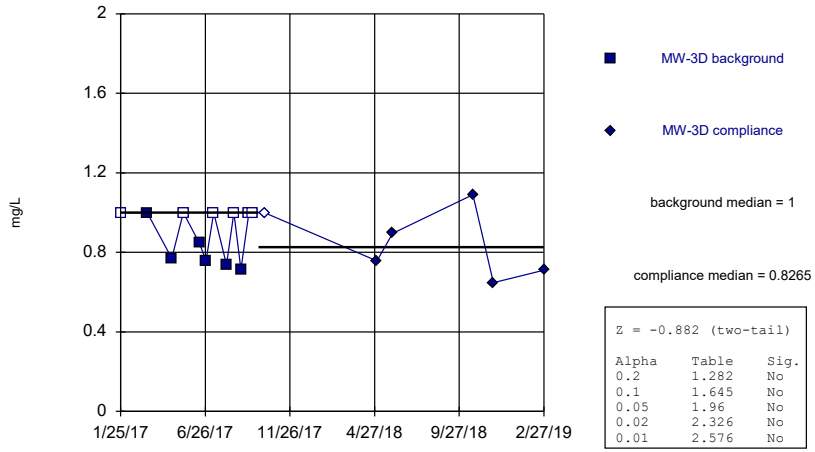
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



Constituent: Fluoride Analysis Run 12/30/2019 4:16 PM

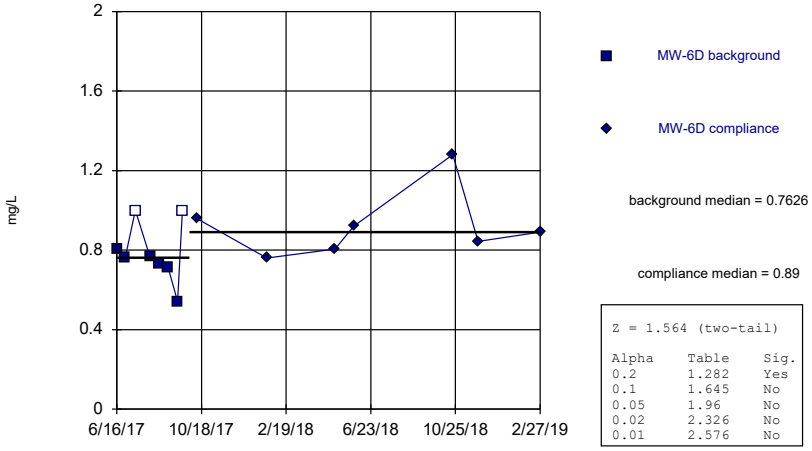
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



Constituent: Fluoride Analysis Run 12/30/2019 4:16 PM

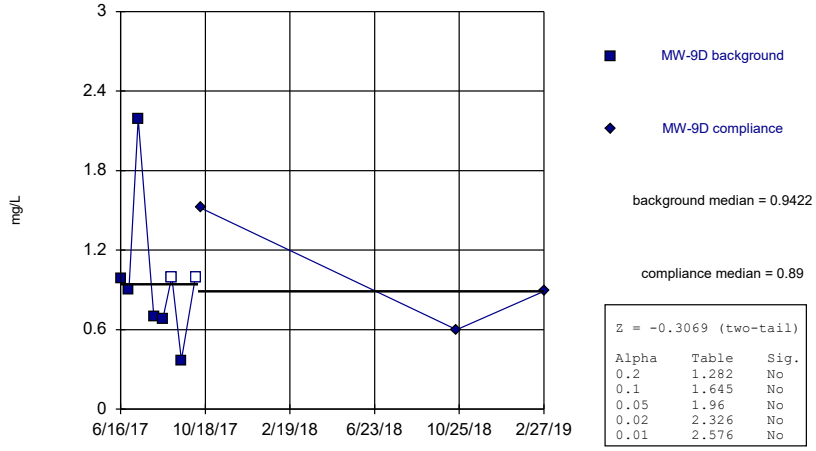
Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D

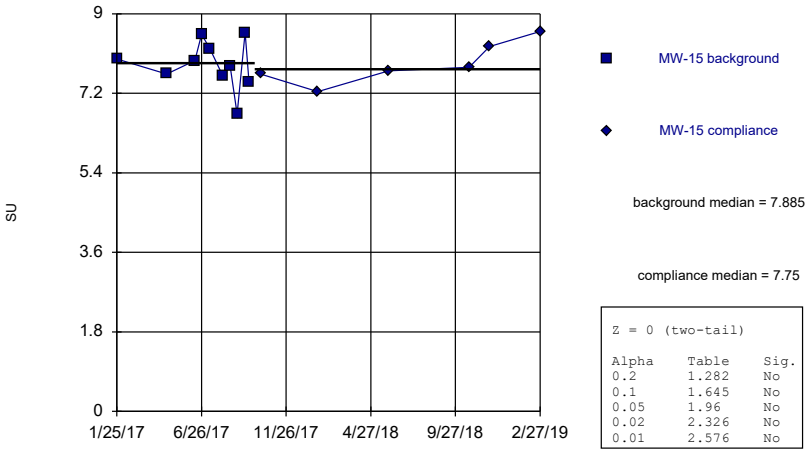


Constituent: Fluoride Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



Z = 0 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

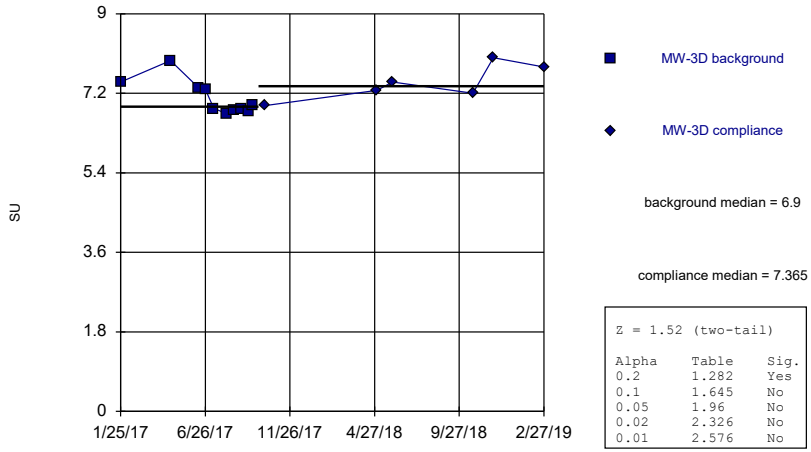
Constituent: pH, field Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



Z = 1.52 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

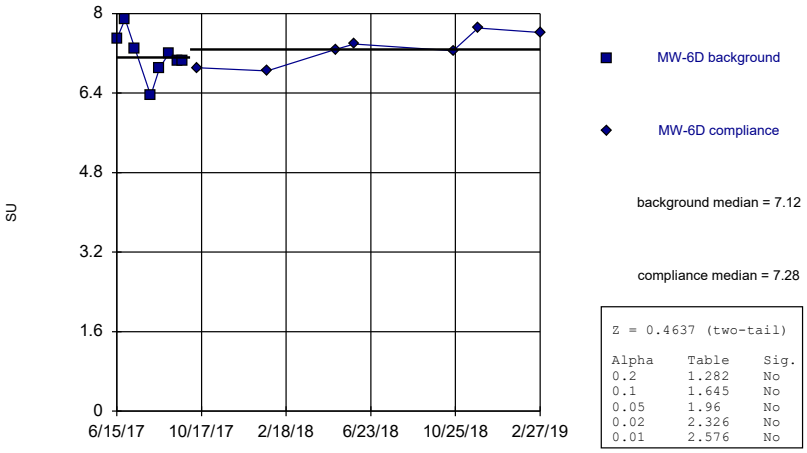
Constituent: pH, field Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



Z = 0.4637 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

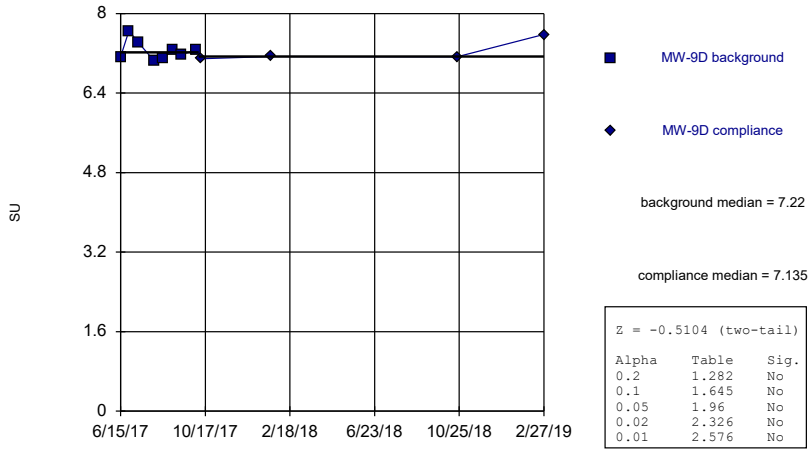
Constituent: pH, field Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D



Z = -0.5104 (two-tail)

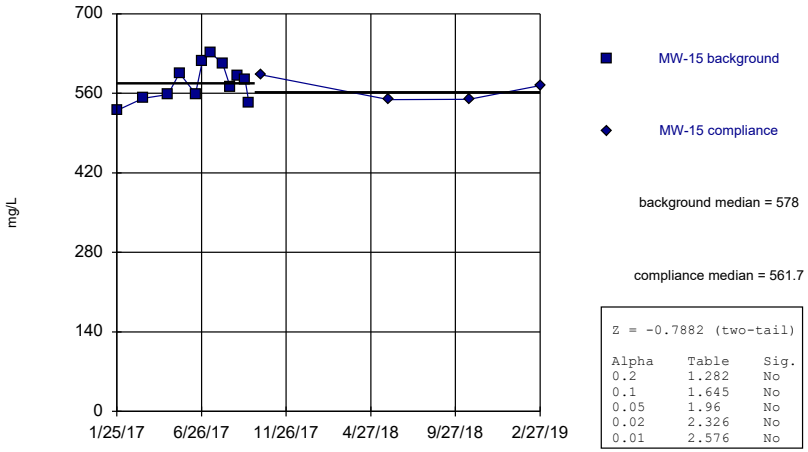
Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: pH, field Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



background median = 578

compliance median = 561.7

Z = -0.7882 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

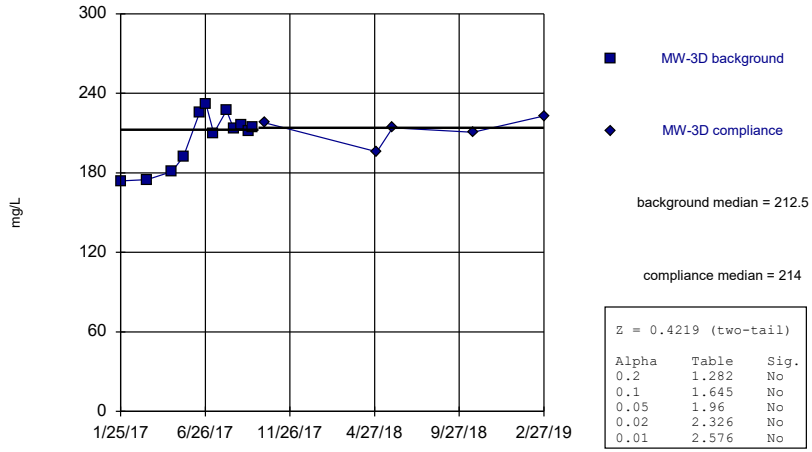
Constituent: Sulfate Analysis Run 12/30/2019 4:16 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



background median = 212.5

compliance median = 214

Z = 0.4219 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

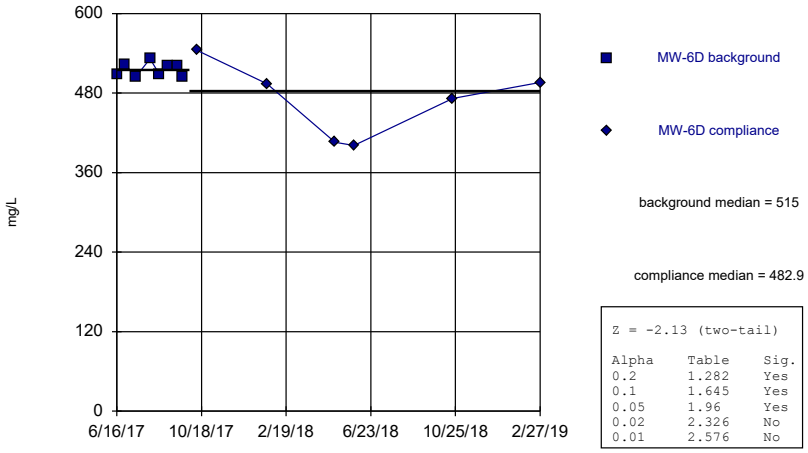
Constituent: Sulfate Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



background median = 515

compliance median = 482.9

Z = -2.13 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	Yes
0.02	2.326	No
0.01	2.576	No

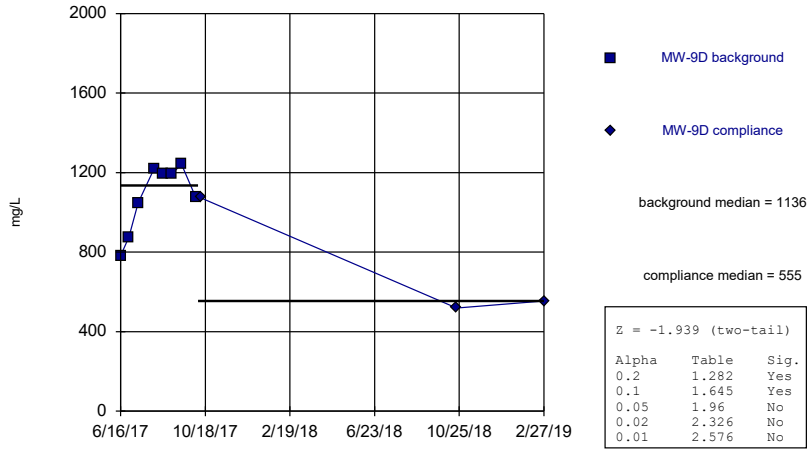
Constituent: Sulfate Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D



background median = 1136

compliance median = 555

Z = -1.939 (two-tail)

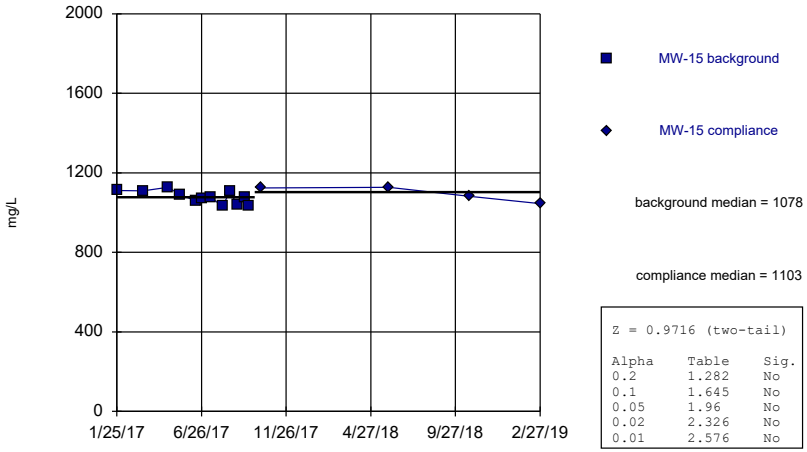
Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: Sulfate Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Mann-Whitney (Wilcoxon Rank Sum)

MW-15



Z = 0.9716 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

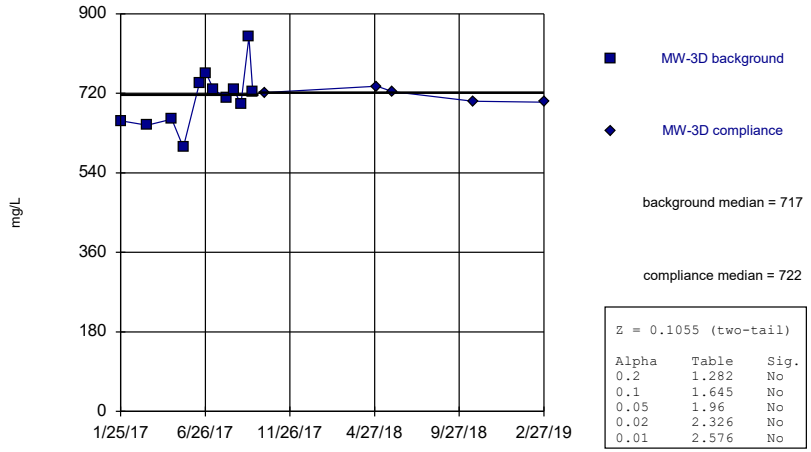
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-3D



Z = 0.1055 (two-tail)

Alpha	Table	Sig.
0.2	1.282	No
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

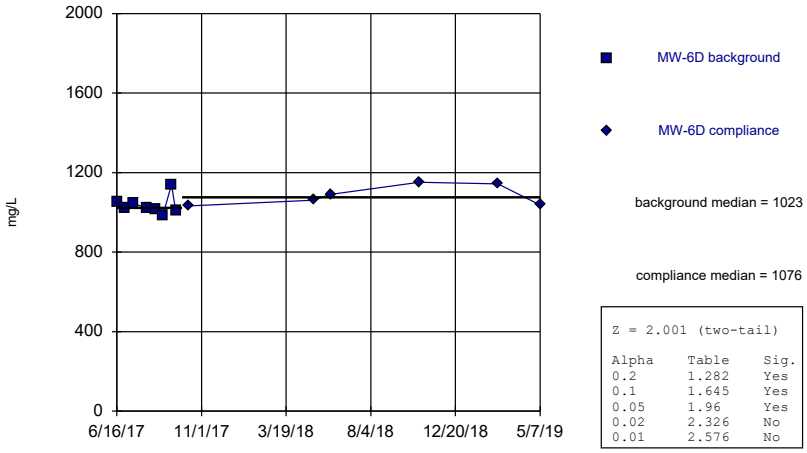
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-6D



Z = 2.001 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	Yes
0.05	1.96	Yes
0.02	2.326	No
0.01	2.576	No

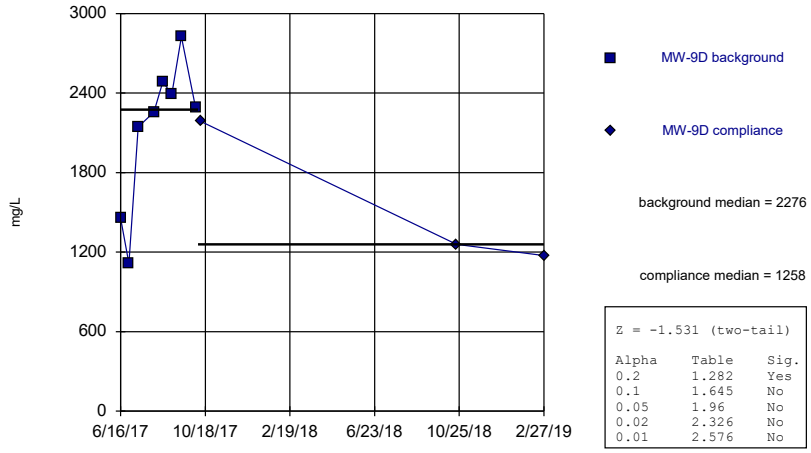
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

MW-9D



Z = -1.531 (two-tail)

Alpha	Table	Sig.
0.2	1.282	Yes
0.1	1.645	No
0.05	1.96	No
0.02	2.326	No
0.01	2.576	No

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/30/2019 4:17 PM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

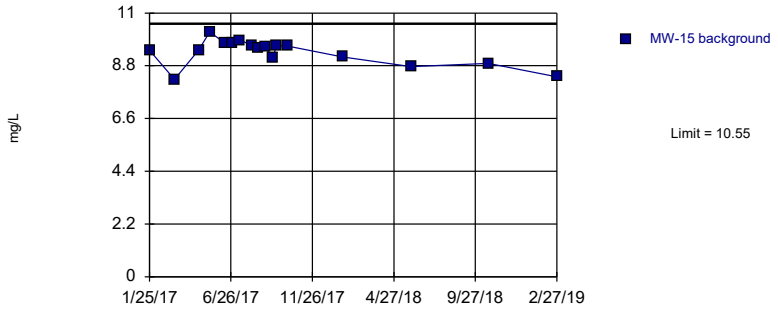
Intrawell Prediction Limit Summary Table - All Results

Northeastern Landfill Client: Geosyntec Data: Northeastern LF Printed 1/8/2020, 9:25 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-12D	10.3	n/a	n/a	1 future	n/a	9	8.926	0.4975	0	None	No	0.001075	Param Intra 1 of 2
Boron (mg/L)	MW-15	10.55	n/a	n/a	1 future	n/a	17	9.354	0.5351	0	None	No	0.001075	Param Intra 1 of 2
Boron (mg/L)	MW-3D	1.07	n/a	n/a	1 future	n/a	18	0.9058	0.07445	0	None	No	0.001075	Param Intra 1 of 2
Boron (mg/L)	MW-4D	1.521	n/a	n/a	1 future	n/a	9	1.298	0.3662	0	None	x^2	0.001075	Param Intra 1 of 2
Boron (mg/L)	MW-5D	0.6465	n/a	n/a	1 future	n/a	9	0.4964	0.05414	0	None	No	0.001075	Param Intra 1 of 2
Boron (mg/L)	MW-6D	4.726	n/a	n/a	1 future	n/a	14	12.4	4.219	0	None	x^2	0.001075	Param Intra 1 of 2
Boron (mg/L)	MW-9D	8.003	n/a	n/a	1 future	n/a	12	7.113	0.3636	0	None	No	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-12D	198.4	n/a	n/a	1 future	n/a	10	102.6	36.57	0	None	No	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-15	196.2	n/a	n/a	1 future	n/a	17	4.536	0.57	0	None	x^(1/3)	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-3D	180.7	n/a	n/a	1 future	n/a	17	136.6	19.71	0	None	No	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-4D	220.6	n/a	n/a	1 future	n/a	10	186.6	12.99	0	None	No	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-5D	171.6	n/a	n/a	1 future	n/a	10	142.6	11.06	0	None	No	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-6D	341.9	n/a	n/a	1 future	n/a	14	215.5	53.67	0	None	No	0.001075	Param Intra 1 of 2
Calcium (mg/L)	MW-9D	455.8	n/a	n/a	1 future	n/a	11	272.3	72.4	0	None	No	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-12D	25.64	n/a	n/a	1 future	n/a	9	18.23	2.673	0	None	No	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-15	103.6	n/a	n/a	1 future	n/a	16	3.32	0.5841	0	None	ln(x)	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-3D	15.95	n/a	n/a	1 future	n/a	16	12.94	1.331	0	None	No	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-4D	46.16	n/a	n/a	1 future	n/a	10	27.83	6.996	0	None	No	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-5D	35.32	n/a	n/a	1 future	n/a	9	27.06	2.981	0	None	No	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-6D	34.12	n/a	n/a	1 future	n/a	13	30.2	1.631	0	None	No	0.001075	Param Intra 1 of 2
Chloride (mg/L)	MW-9D	402.8	n/a	n/a	1 future	n/a	11	153.8	98.22	0	None	No	0.001075	Param Intra 1 of 2
Fluoride (mg/L)	MW-12D	3.399	n/a	n/a	1 future	n/a	10	2.407	0.3786	0	None	No	0.001075	Param Intra 1 of 2
Fluoride (mg/L)	MW-15	2.486	n/a	n/a	1 future	n/a	17	3.574	1.166	0	None	x^2	0.001075	Param Intra 1 of 2
Fluoride (mg/L)	MW-3D	1.09	n/a	n/a	1 future	n/a	18	n/a	n/a	38.89	n/a	n/a	0.005373	NP Intra (normality) 1 of 2
Fluoride (mg/L)	MW-4D	1	n/a	n/a	1 future	n/a	10	n/a	n/a	70	n/a	n/a	0.01476	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-5D	1.236	n/a	n/a	1 future	n/a	9	0.6811	0.2004	0	None	No	0.001075	Param Intra 1 of 2
Fluoride (mg/L)	MW-6D	1.244	n/a	n/a	1 future	n/a	15	0.8518	0.17	13.33	None	No	0.001075	Param Intra 1 of 2
Fluoride (mg/L)	MW-9D	2.177	n/a	n/a	1 future	n/a	11	0.9357	0.4897	18.18	Kaplan-Meier	No	0.001075	Param Intra 1 of 2
pH, field (SU)	MW-12D	10.19	6.726	n/a	1 future	n/a	10	8.459	0.6611	0	None	No	0.0005373	Param Intra 1 of 2
pH, field (SU)	MW-15	9.003	6.717	n/a	1 future	n/a	16	7.86	0.5058	0	None	No	0.0005373	Param Intra 1 of 2
pH, field (SU)	MW-3D	8.176	6.283	n/a	1 future	n/a	16	7.229	0.4188	0	None	No	0.0005373	Param Intra 1 of 2
pH, field (SU)	MW-4D	8.626	6.724	n/a	1 future	n/a	10	7.675	0.3629	0	None	No	0.0005373	Param Intra 1 of 2
pH, field (SU)	MW-5D	8.777	6.929	n/a	1 future	n/a	10	7.853	0.3525	0	None	No	0.0005373	Param Intra 1 of 2
pH, field (SU)	MW-6D	8.11	6.321	n/a	1 future	n/a	15	7.215	0.3877	0	None	No	0.0005373	Param Intra 1 of 2
pH, field (SU)	MW-9D	7.735	6.763	n/a	1 future	n/a	12	7.249	0.1985	0	None	No	0.0005373	Param Intra 1 of 2
Sulfate (mg/L)	MW-12D	719.3	n/a	n/a	1 future	n/a	10	559.9	60.82	0	None	No	0.001075	Param Intra 1 of 2
Sulfate (mg/L)	MW-15	641.8	n/a	n/a	1 future	n/a	16	575.5	29.3	0	None	No	0.001075	Param Intra 1 of 2
Sulfate (mg/L)	MW-3D	247.7	n/a	n/a	1 future	n/a	17	207.8	17.87	0	None	No	0.001075	Param Intra 1 of 2
Sulfate (mg/L)	MW-4D	427.3	n/a	n/a	1 future	n/a	10	296.4	49.97	0	None	No	0.001075	Param Intra 1 of 2
Sulfate (mg/L)	MW-5D	159.5	n/a	n/a	1 future	n/a	8	130.3	9.991	0	None	No	0.001075	Param Intra 1 of 2
Sulfate (mg/L)	MW-6D	584.8	n/a	n/a	1 future	n/a	14	247359	40167	0	None	x^2	0.001075	Param Intra 1 of 2
Sulfate (mg/L)	MW-9D	1642	n/a	n/a	1 future	n/a	11	979.9	261.3	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-12D	1155	n/a	n/a	1 future	n/a	9	1067	31.54	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-15	1159	n/a	n/a	1 future	n/a	16	1083	33.69	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-3D	832.2	n/a	n/a	1 future	n/a	17	711.3	54.08	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-4D	1037	n/a	n/a	1 future	n/a	9	896.4	50.69	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-5D	686.3	n/a	n/a	1 future	n/a	8	638.8	16.28	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-6D	1184	n/a	n/a	1 future	n/a	14	1058	53.48	0	None	No	0.001075	Param Intra 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MW-9D	3479	n/a	n/a	1 future	n/a	11	1963	598.2	0	None	No	0.001075	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, MW-15



Background Data Summary: Mean=9.354, Std. Dev.=0.5351, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9183, critical = 0.851. Kappa = 2.235 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

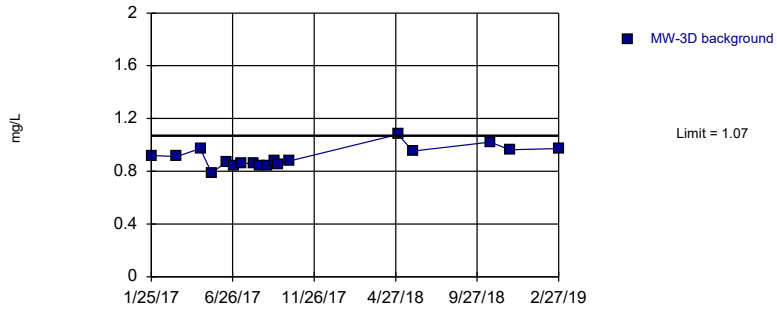
Constituent: Boron Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-3D



Background Data Summary: Mean=0.9058, Std. Dev.=0.07445, n=18. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9359, critical = 0.858. Kappa = 2.209 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

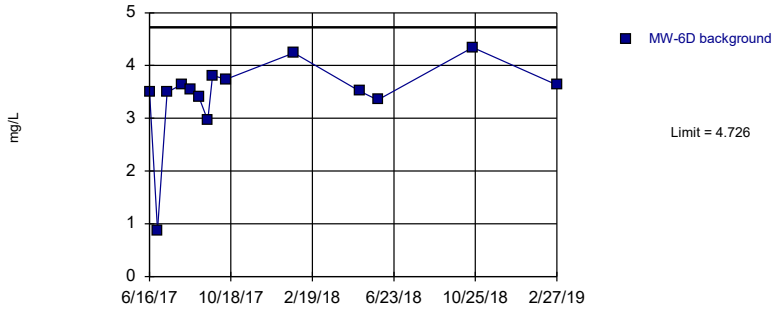
Constituent: Boron Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-6D



Background Data Summary (based on square transformation): Mean=12.4, Std. Dev.=4.219, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8444, critical = 0.825. Kappa = 2.355 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

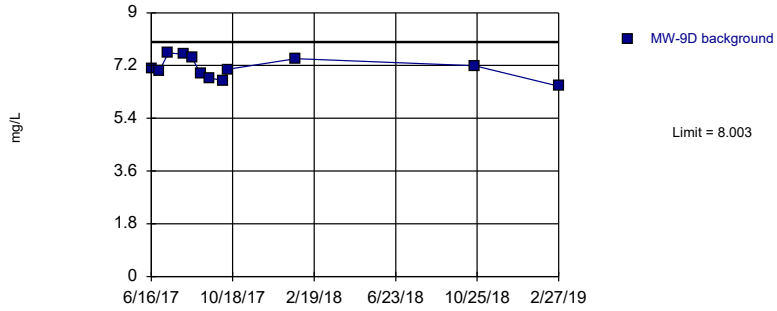
Constituent: Boron Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-9D



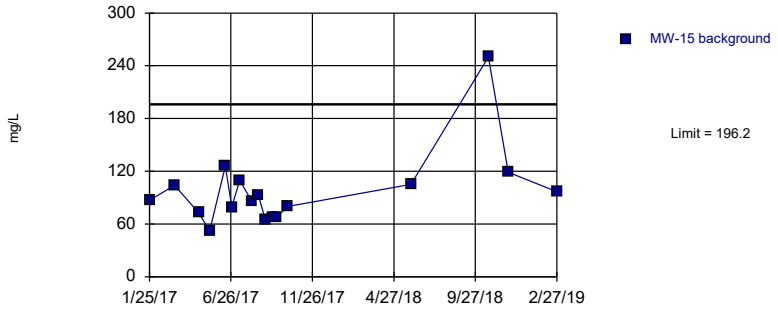
Background Data Summary: Mean=7.113, Std. Dev.=0.3636, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9618, critical = 0.805. Kappa = 2.449 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Boron Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-15



Background Data Summary (based on cube root transformation): Mean=4.536, Std. Dev.=0.57, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8529, critical = 0.851. Kappa = 2.235 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

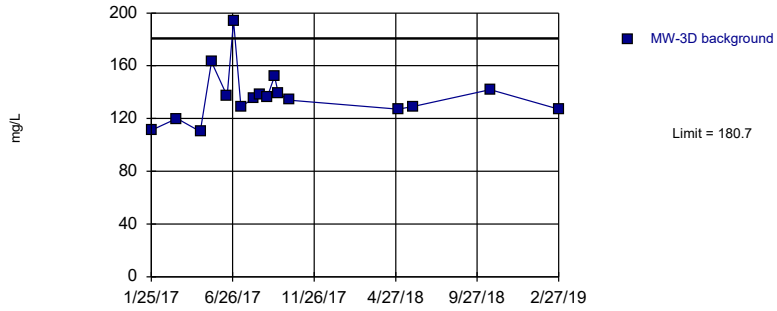
Constituent: Calcium Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-3D



Background Data Summary: Mean=136.6, Std. Dev.=19.71, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8656, critical = 0.851. Kappa = 2.235 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

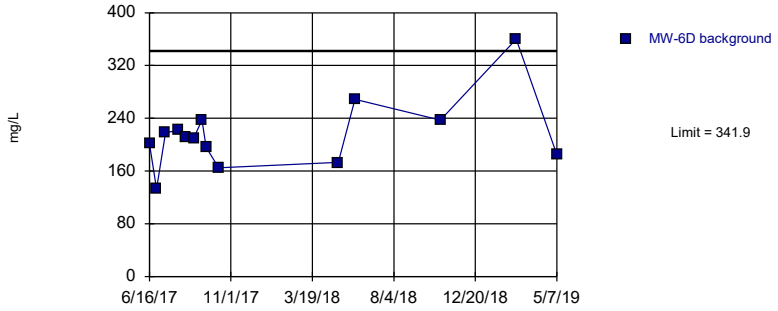
Constituent: Calcium Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-6D



Background Data Summary: Mean=215.5, Std. Dev.=53.67, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8972, critical = 0.825. Kappa = 2.355 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

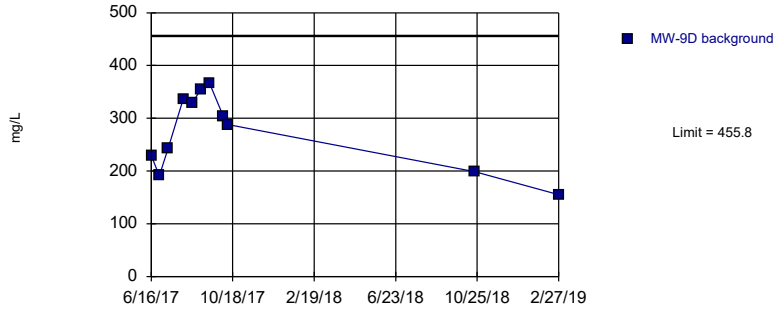
Constituent: Calcium Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-9D



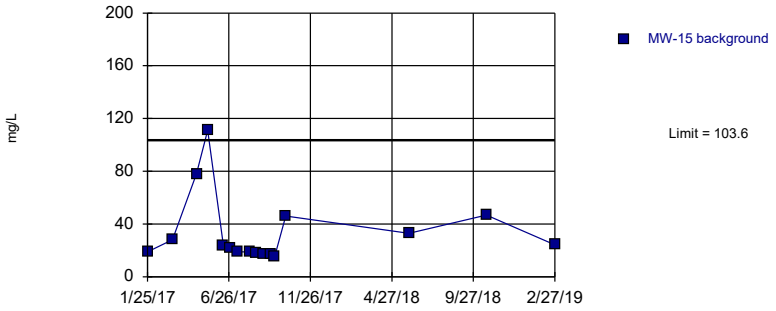
Background Data Summary: Mean=272.3, Std. Dev.=72.4, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.938, critical = 0.792. Kappa = 2.535 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Calcium Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-15



Background Data Summary (based on natural log transformation): Mean=3.32, Std. Dev.=0.5841, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8499, critical = 0.844. Kappa = 2.261 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

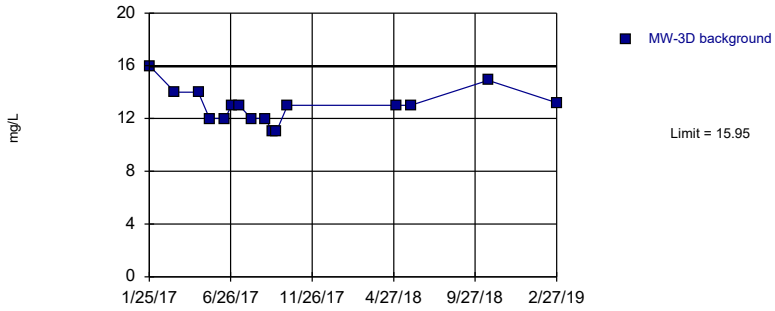
Constituent: Chloride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-3D



Background Data Summary: Mean=12.94, Std. Dev.=1.331, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9315, critical = 0.844. Kappa = 2.261 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

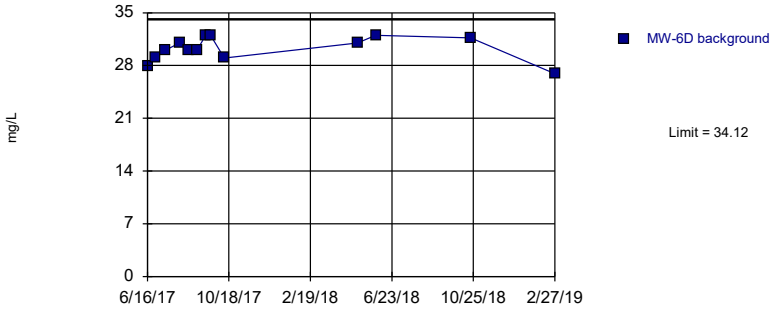
Constituent: Chloride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-6D



Background Data Summary: Mean=30.2, Std. Dev.=1.631, n=13. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9162, critical = 0.814. Kappa = 2.402 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

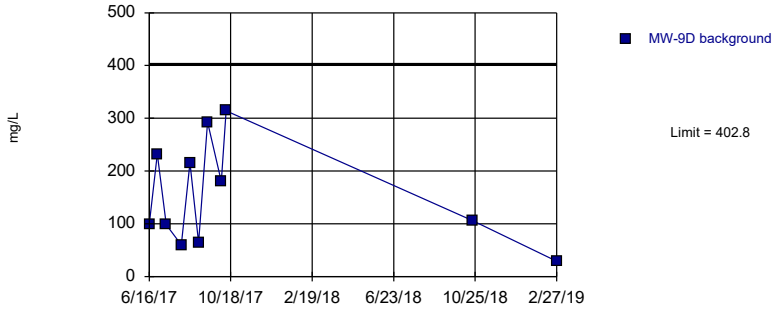
Constituent: Chloride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-9D



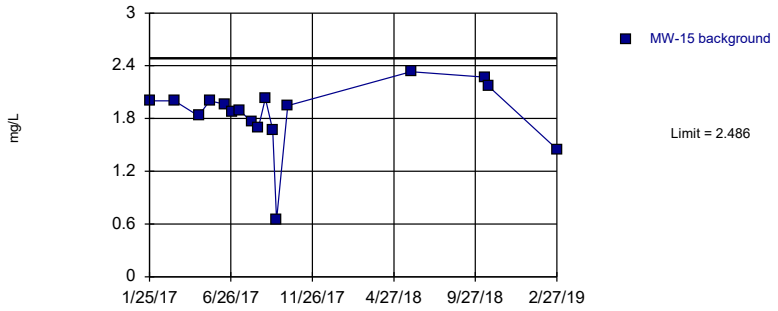
Background Data Summary: Mean=153.8, Std. Dev.=98.22, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9163, critical = 0.792. Kappa = 2.535 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Chloride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-15



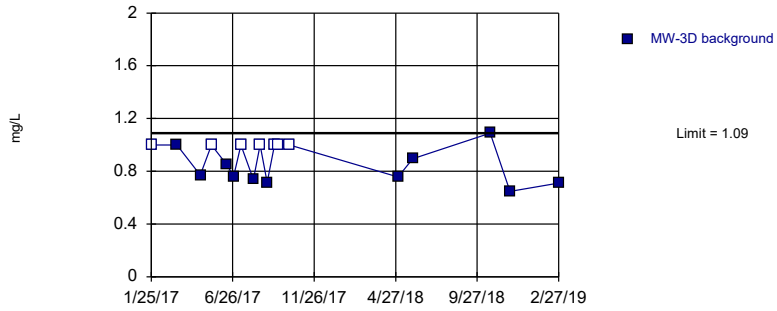
Background Data Summary (based on square transformation): Mean=3.574, Std. Dev.=1.166, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.924, critical = 0.851. Kappa = 2.235 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Fluoride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Non-parametric, MW-3D



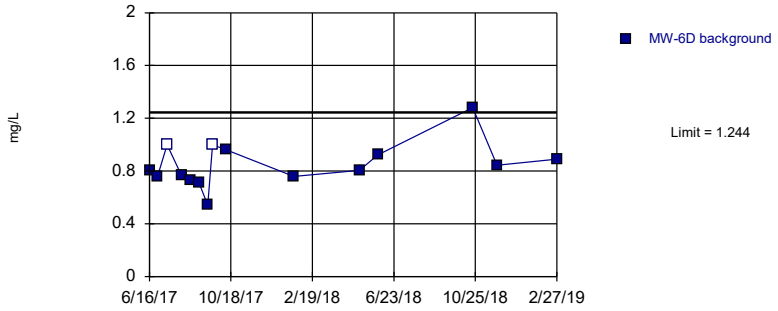
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 18 background values. 38.89% NDs. Well-constituent pair annual alpha = 0.01072. Individual comparison alpha = 0.005373 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-6D



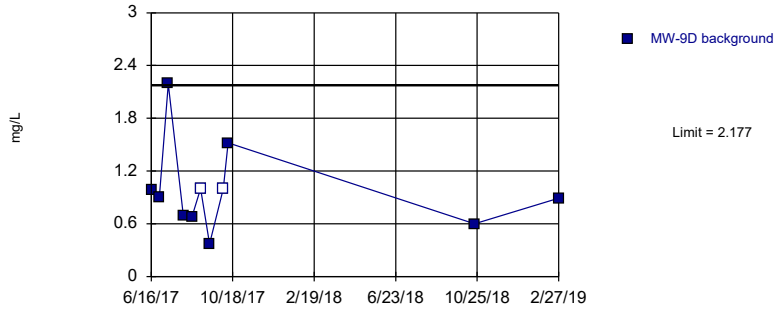
Background Data Summary: Mean=0.8518, Std. Dev.=0.17, n=15, 13.33% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9337, critical = 0.835. Kappa = 2.308 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Fluoride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-9D



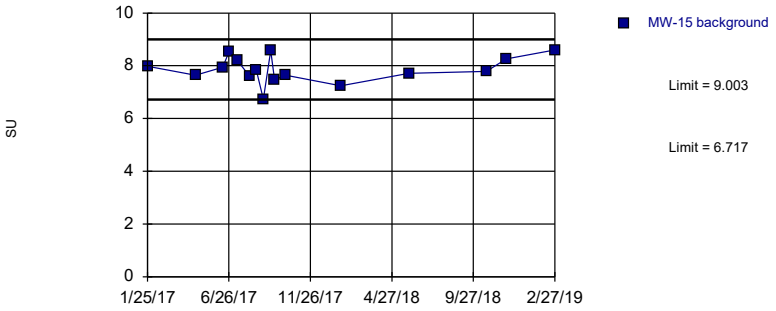
Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.9357, Std. Dev.=0.4897, n=11, 18.18% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8512, critical = 0.792. Kappa = 2.535 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Fluoride Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-15



Background Data Summary: Mean=7.86, Std. Dev.=0.5058, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9557, critical = 0.844. Kappa = 2.261 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

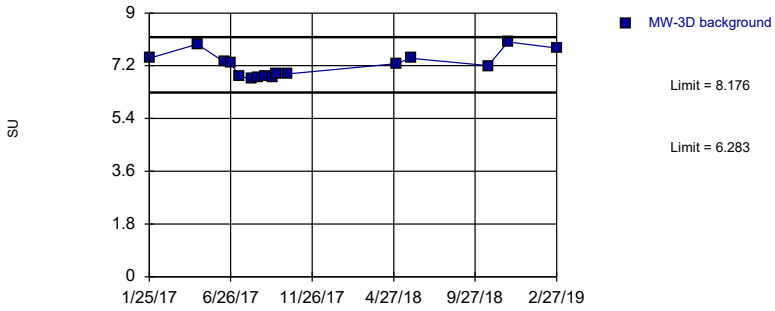
Constituent: pH, field Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-3D



Background Data Summary: Mean=7.229, Std. Dev.=0.4188, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8997, critical = 0.844. Kappa = 2.261 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

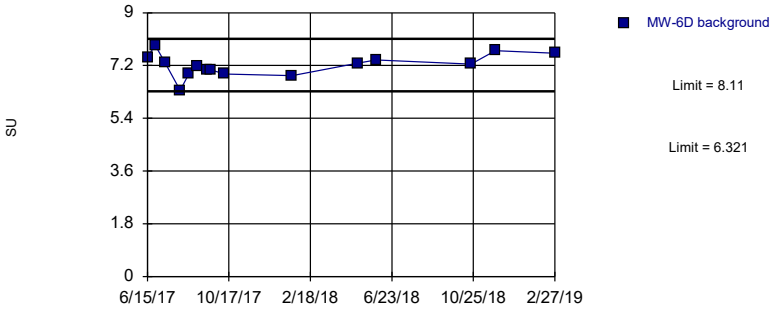
Constituent: pH, field Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-6D



Background Data Summary: Mean=7.215, Std. Dev.=0.3877, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9778, critical = 0.835. Kappa = 2.308 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

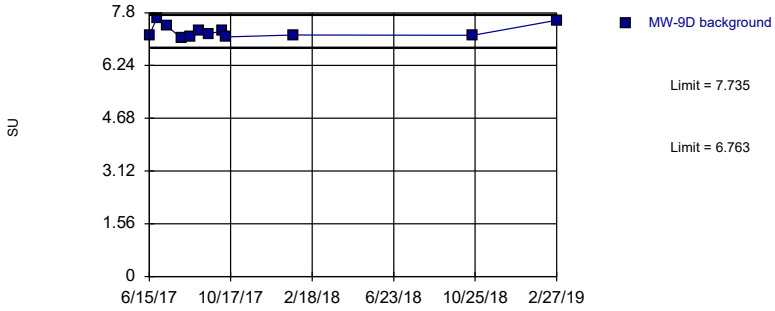
Constituent: pH, field Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-9D



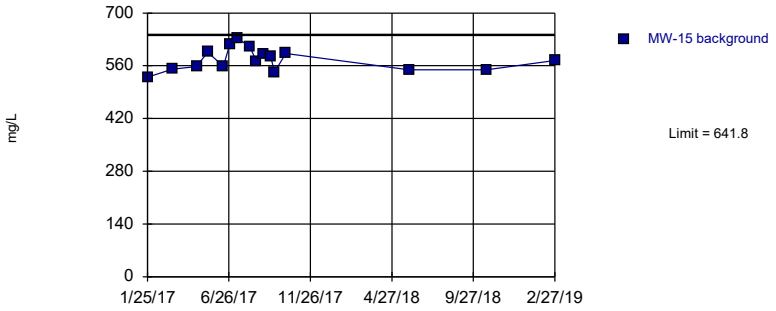
Background Data Summary: Mean=7.249, Std. Dev.=0.1985, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.849, critical = 0.805. Kappa = 2.449 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: pH, field Analysis Run 1/8/2020 9:23 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-15



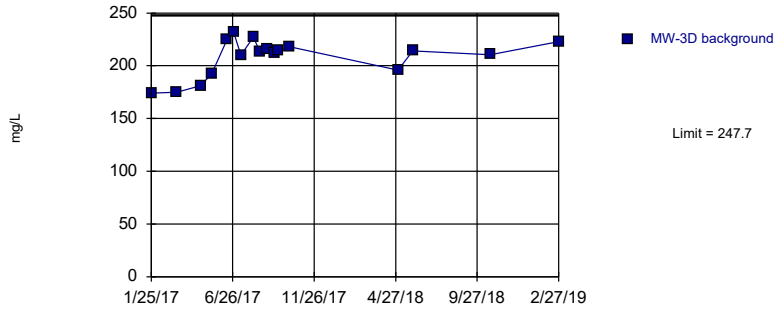
Background Data Summary: Mean=575.5, Std. Dev.=29.3, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9624, critical = 0.844. Kappa = 2.261 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-3D



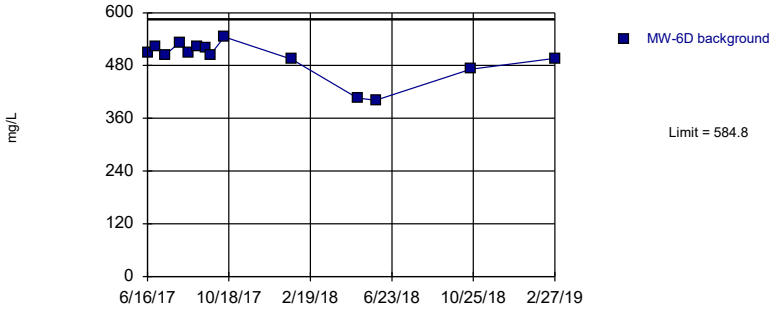
Background Data Summary: Mean=207.8, Std. Dev.=17.87, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8916, critical = 0.851. Kappa = 2.235 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-6D



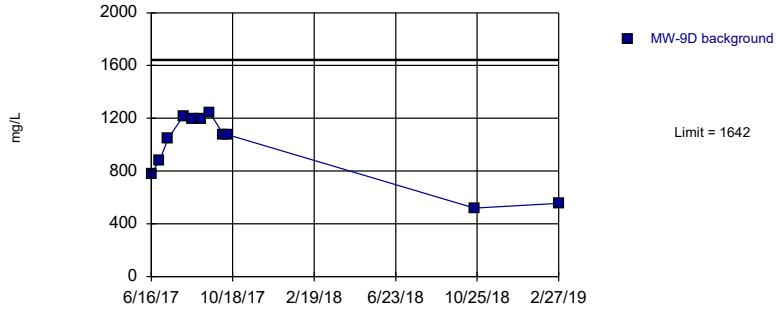
Background Data Summary (based on square transformation): Mean=247359, Std. Dev.=40167, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8339, critical = 0.825. Kappa = 2.355 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-9D



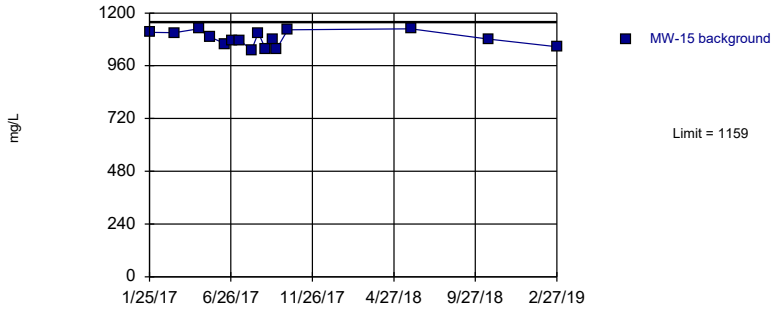
Background Data Summary: Mean=979.9, Std. Dev.=261.3, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8587, critical = 0.792. Kappa = 2.535 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-15



Background Data Summary: Mean=1083, Std. Dev.=33.69, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9226, critical = 0.844. Kappa = 2.261 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

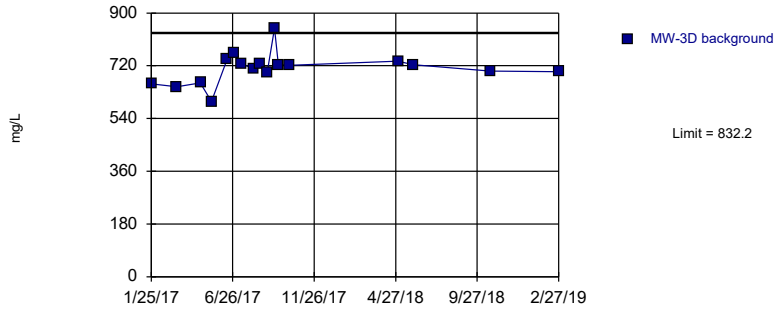
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-3D



Background Data Summary: Mean=711.3, Std. Dev.=54.08, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9331, critical = 0.851. Kappa = 2.235 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

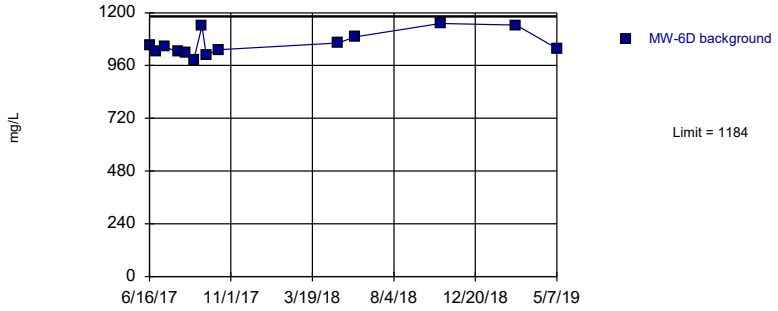
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-6D



Background Data Summary: Mean=1058, Std. Dev.=53.48, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.886, critical = 0.825. Kappa = 2.355 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

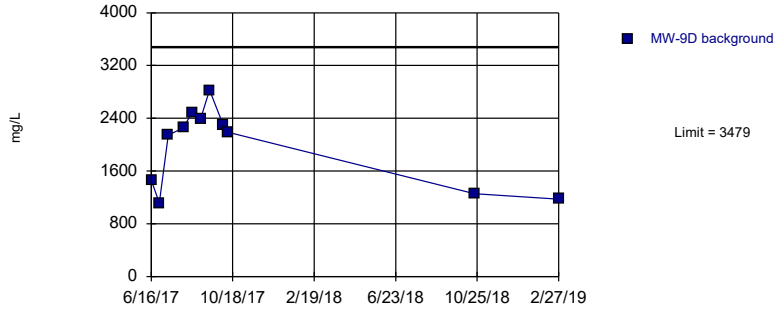
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-9D



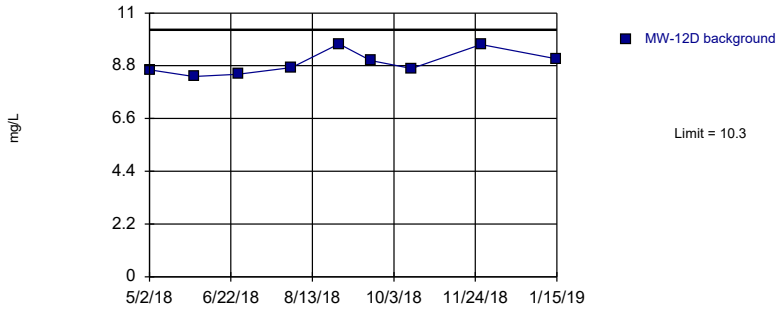
Background Data Summary: Mean=1963, Std. Dev.=598.2, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8829, critical = 0.792. Kappa = 2.535 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-12D



Background Data Summary: Mean=8.926, Std. Dev.=0.4975, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8856, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

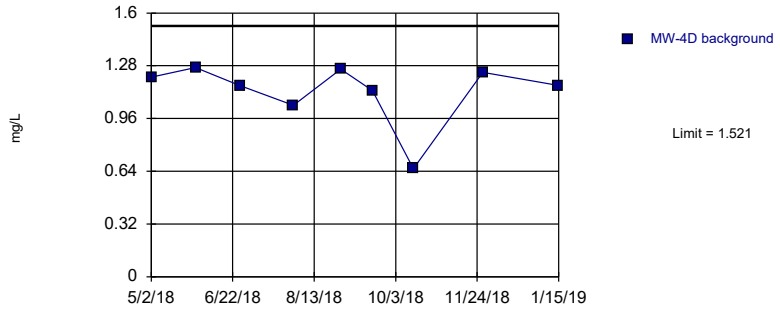
Constituent: Boron Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-4D



Background Data Summary (based on square transformation): Mean=1.298, Std. Dev.=0.3662, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7945, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

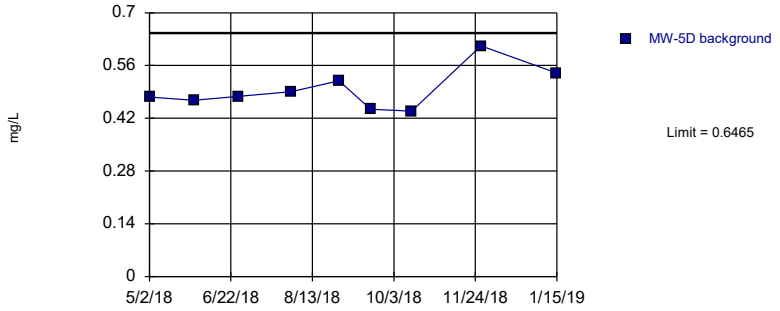
Constituent: Boron Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-5D



Background Data Summary: Mean=0.4964, Std. Dev.=0.05414, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8928, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

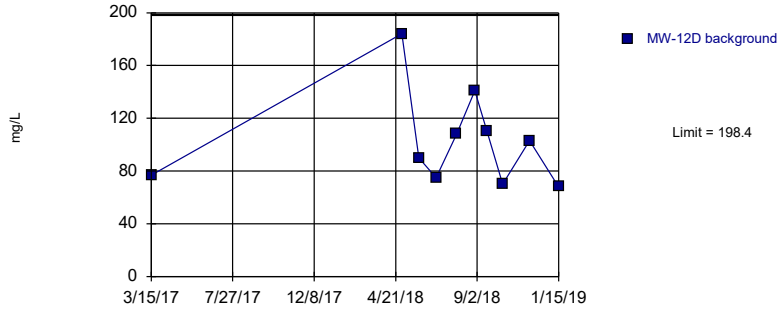
Constituent: Boron Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-12D



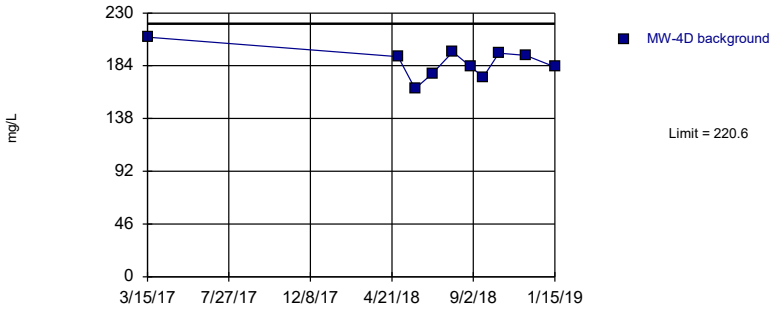
Background Data Summary: Mean=102.6, Std. Dev.=36.57, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8609, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Calcium Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-4D



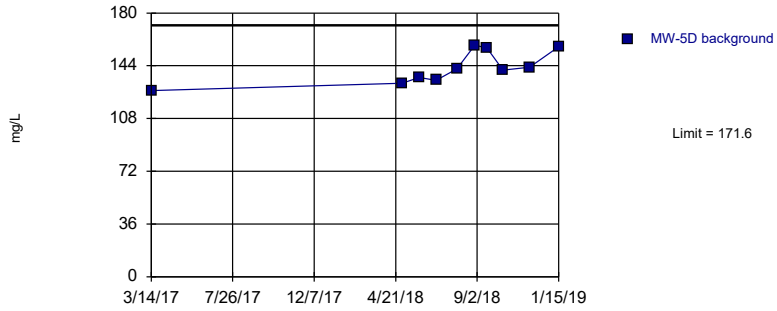
Background Data Summary: Mean=186.6, Std. Dev.=12.99, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9763, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Calcium Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-5D



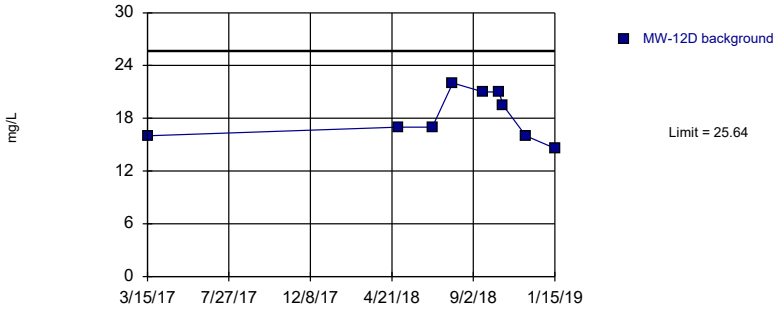
Background Data Summary: Mean=142.6, Std. Dev.=11.06, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9089, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Calcium Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-12D



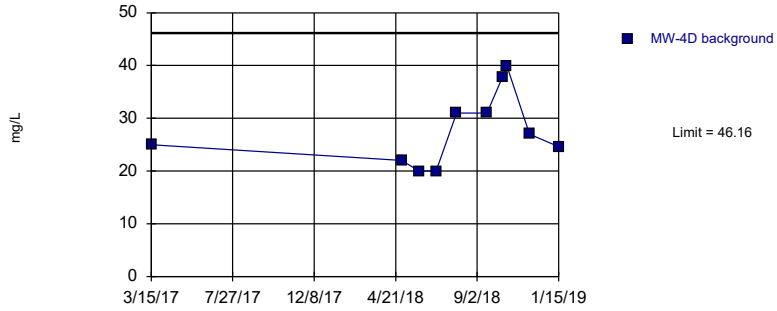
Background Data Summary: Mean=18.23, Std. Dev.=2.673, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9063, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Chloride Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-4D



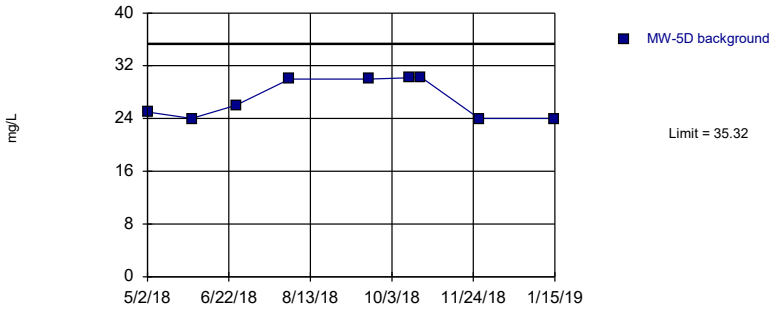
Background Data Summary: Mean=27.83, Std. Dev.=6.996, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.912, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Chloride Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-5D



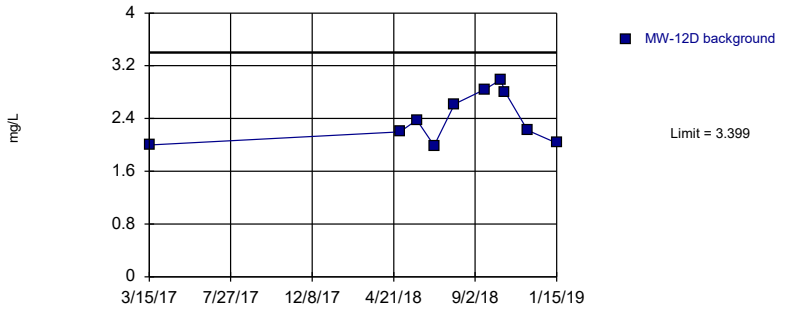
Background Data Summary: Mean=27.06, Std. Dev.=2.981, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.766, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Chloride Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-12D



Background Data Summary: Mean=2.407, Std. Dev.=0.3786, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8954, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

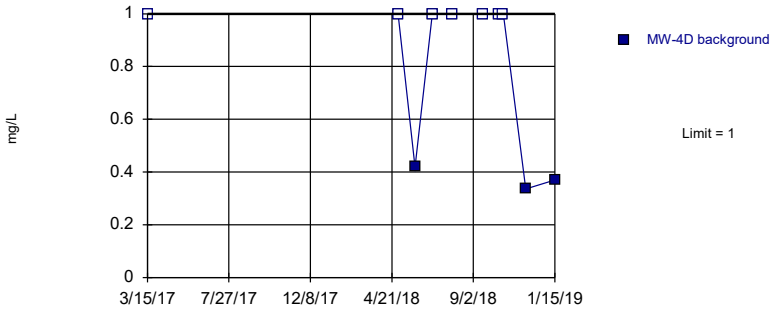
Constituent: Fluoride Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-4D



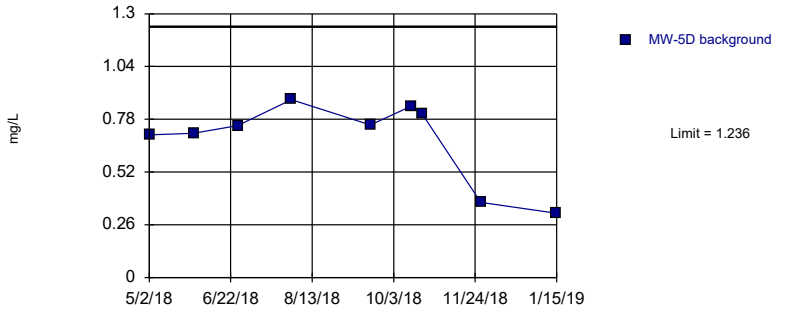
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 70% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-5D



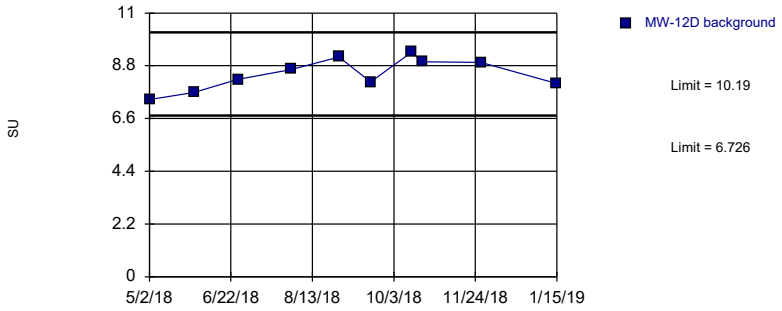
Background Data Summary: Mean=0.6811, Std. Dev.=0.2004, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8042, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Fluoride Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-12D



Background Data Summary: Mean=8.459, Std. Dev.=0.6611, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9542, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

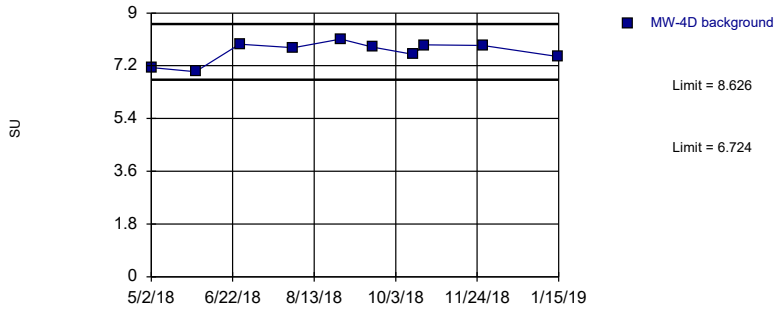
Constituent: pH, field Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-4D



Background Data Summary: Mean=7.675, Std. Dev.=0.3629, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8836, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

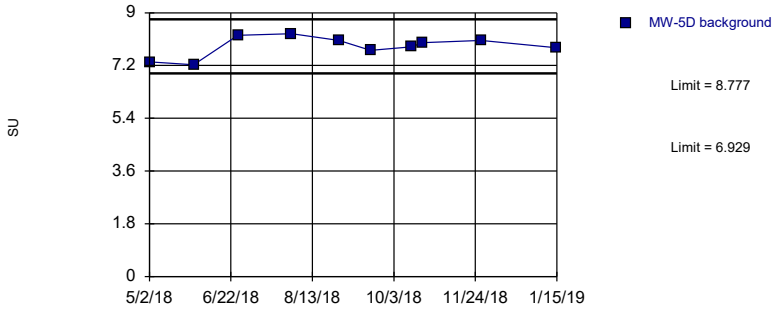
Constituent: pH, field Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-5D



Background Data Summary: Mean=7.853, Std. Dev.=0.3525, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9142, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

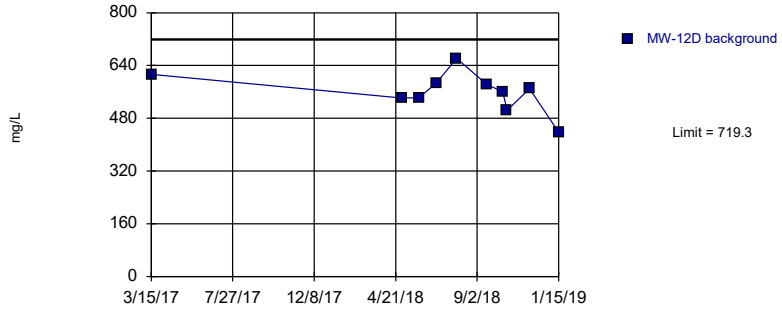
Constituent: pH, field Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-12D



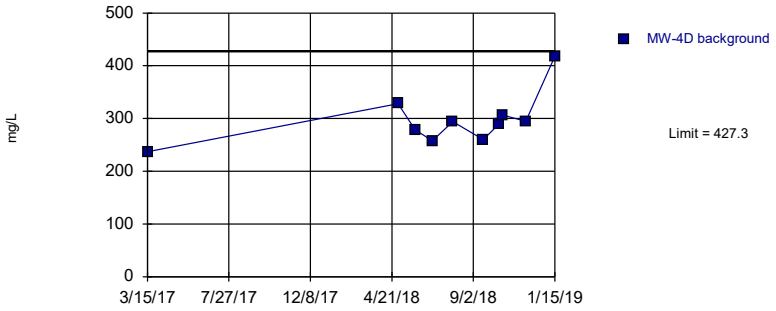
Background Data Summary: Mean=559.9, Std. Dev.=60.82, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9684, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-4D



Background Data Summary: Mean=296.4, Std. Dev.=49.97, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8559, critical = 0.781. Kappa = 2.621 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

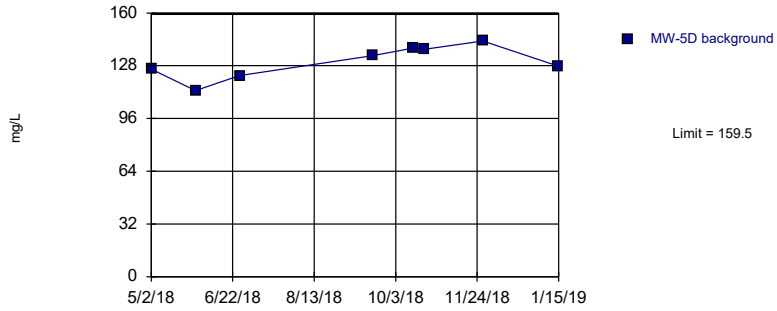
Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-5D



Background Data Summary: Mean=130.3, Std. Dev.=9.991, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9593, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

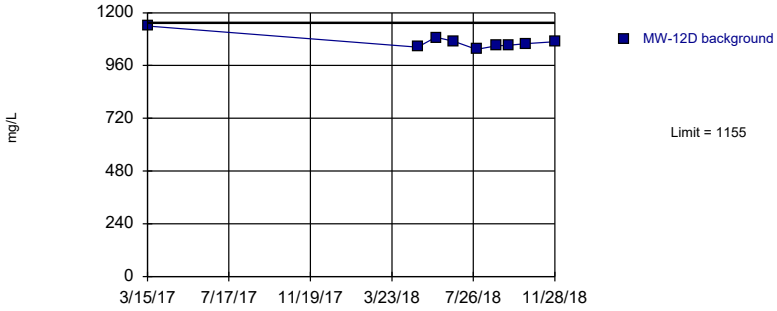
Constituent: Sulfate Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-12D



Background Data Summary: Mean=1067, Std. Dev.=31.54, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8479, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

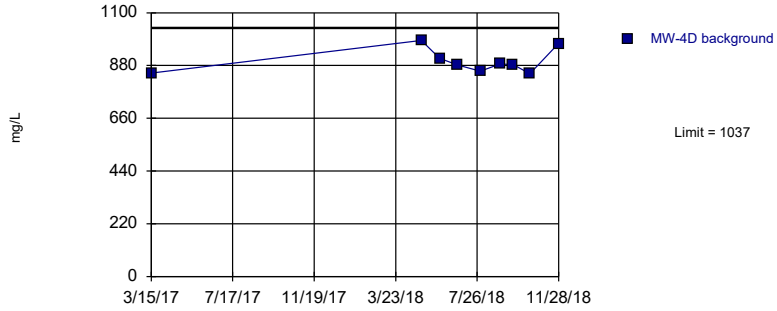
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Sanitas™ v.9.6.24 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-4D



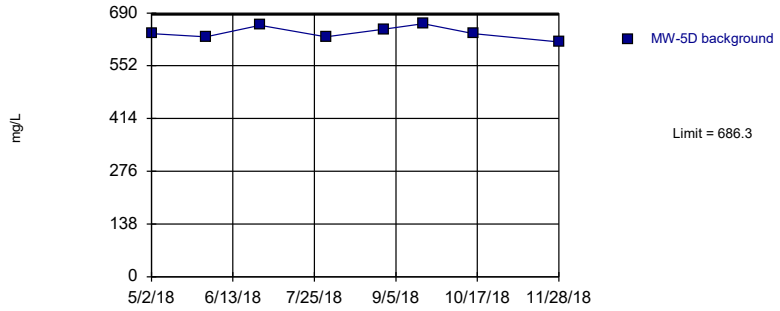
Background Data Summary: Mean=896.4, Std. Dev.=50.69, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8544, critical = 0.764. Kappa = 2.772 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Prediction Limit

Intrawell Parametric, MW-5D



Background Data Summary: Mean=638.8, Std. Dev.=16.28, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9519, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/8/2020 9:24 AM

Northeastern Landfill Client: Geosyntec Data: Northeastern LF

Geosyntec consultants

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Columbus, Ohio 43212
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Memorandum

Date:	December 1, 2020
To:	David Miller (AEP)
Copies to:	Jill Parker-Witt (AEP)
From:	Allison Kreinberg (Geosyntec)
Subject:	Evaluation of Detection Monitoring Data at Northeastern Plant's Landfill (LF)

In accordance with Oklahoma Department of Environmental Quality rules regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (OAC 252.517), the first semi-annual detection monitoring event of 2020 at the Landfill (LF), an existing CCR unit at the Northeastern Power Plant located in Oologah, Oklahoma, was completed June 29-30, 2020. Based on the results, verification sampling was completed on September 8, 2020.

Background values for the LF were previously calculated for wells MW-3D, MW-6D, MW-9D, MW-12D, and MW-15 in January 2018. After a minimum of four detection monitoring events, the results of those events were compared to the existing background dataset, and the background dataset was updated as appropriate. Revised upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Lower prediction limits (LPLs) were also calculated for pH. Details on the calculation of these revised background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 8, 2019. After a revision to the well network, background values for MW-4D, and MW-5D, and MW-12D were calculated in July 2019.

To achieve an acceptably high statistical power while maintaining a site-wide false-positive rate (SWFPR) of 10% per year or less, prediction limits were calculated based on a one-of-two retesting procedure. With this procedure, a statistically significant increase (SSI) is only concluded if both samples in a series of two exceeds the UPL. In practice, if the initial result did not exceed the UPL, a second sample was not collected or analyzed.

Detection monitoring results and the relevant background values are compared in Table 1 and noted exceedances are described in the list below.

- pH values exceeded the intrawell UPL of 7.7 SU in both the initial (10.9 SU) and second (8.6 SU) samples collected at MW-9D. Therefore, an SSI over background is concluded for pH at MW-9D.

- Sulfate concentrations exceeded the intrawell UPL of 160 mg/L in both the initial (165 mg/L) and second (176 mg/L) samples collected at MW-5D. Sulfate concentrations also exceeded the intrawell UPL of 642 mg/L in both the initial (706 mg/L) and second (730 mg/L) collected at MW-15. Therefore, SSIs over background are concluded for sulfate at MW-5D and MW-15.

In response to the exceedances noted above, the Northeastern LF CCR unit will either transition to assessment monitoring or an alternative source demonstration (ASD) for pH and sulfate will be conducted in accordance with OAC 252:517-9-5(e)(2). If the ASD is successful, the Northeastern LF will remain in detection monitoring.

The statistical analysis was conducted within 90 days of completion of sampling and analysis in accordance with OAC 252:517-9-4(h)(6). A certification of these statistics by a qualified professional engineer is provided in Attachment A.

Table 1: Detection Monitoring Data Summary
Northeastern Plant - Landfill

Analyte	Unit	Description	MW-3D		MW-4D	MW-5D		MW-6D		MW-9D		MW-12D	MW-15	
			6/30/2020	9/8/2020	6/30/2020	6/29/2020	9/8/2020	6/30/2020	9/8/2020	6/30/2020	9/8/2020	6/29/2020	6/30/2020	9/8/2020
Boron	mg/L	Intrawell Background Value (UPL)	1.07		1.52	0.647		4.73		8.00		10.3	10.6	
		Analytical Result	0.941	--	0.966	0.508	--	3.07	--	6.51	--	8.04	8.00	--
Calcium	mg/L	Intrawell Background Value (UPL)	181		221	172		342		456		198	196	
		Analytical Result	116	--	176	124	--	180	--	128	--	82.2	105	--
Chloride	mg/L	Intrawell Background Value (UPL)	16.0		46.2	35.3		34.1		403		25.6	104	
		Analytical Result	13.7	--	22.3	26.7	--	24.9	--	26.2	--	15.0	17.9	--
Fluoride	mg/L	Intrawell Background Value (UPL)	1.09		1.00	1.24		1.24		2.18		3.40	2.49	
		Analytical Result	0.77	--	0.25	0.57	--	0.76	--	0.95	--	1.92	1.55	--
pH	SU	Intrawell Background Value (UPL)	8.2		8.6	8.8		8.1		7.7		10.2	9.0	
		Intrawell Background Value (UPL)	6.3		6.7	6.9		6.3		6.8		6.7	6.7	
		Analytical Result	**8.6**	7.8	8.4	8.7	--	**8.8**	8.0	**10.9**	**8.6**	8.8	**9.3**	8.9
Sulfate	mg/L	Intrawell Background Value (UPL)	248		428	160		585		1,640		720	642	
		Analytical Result	206	--	361	**165**	**176**	533	--	602	--	602	**706**	**730**
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	832		1,040	686		1,180		3,480		1,160	1,160	
		Analytical Result	680	--	884	641	--	1,080	--	1,070	--	945	1,100	--

Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
Bold values exceed the background value.
Background values are shaded gray.

ATTACHMENT A

Certification by a Qualified Professional Engineer

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

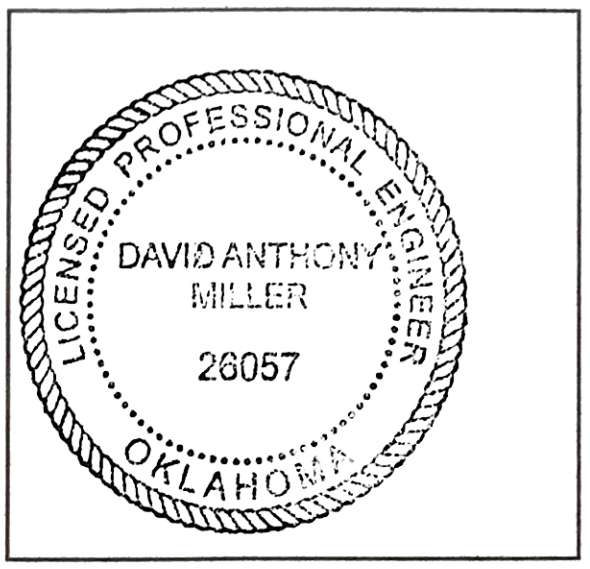
I certify that the selected statistical method, described above and in the January 8, 2020 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Northeastern LF CCR management area and that the requirements of OAC 252:517-9-4(g) have been met.

DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature



26057	OKLAHOMA	12.08.2020
License Number	Licensing State	Date

APPENDIX III

Groundwater monitoring field and laboratory reports.

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald. **DATE:** 06/29-30/20.

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	Listed Metals	Appendix III	Listed Metals
Depth to Water (ft)	51.28	23.53	57.64	32.01	37.23	22.13
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)	6.97	14.23	4.16	4.74	25.72	5.08
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.14	2.32	0.68	0.77	4.19	0.83
Water Removed From Well (gallons)	0.75	—	3.0	2.0	13.0	1.25
Method of Removal	Bailer	—	Pump	Pump	Pump	Pump
Was Well Purged Dry?	YES	—	NO	YES	NO	YES
pH (standard units)	—	—	13.71	14.00	8.59	8.70
Temperature (°C)	—	—	20.94	21.06	20.34	22.41
Conductivity (µmhos/cc)	—	—	2050	3220	1090	2900
Turbidity (NTU)	—	—	32.2	82.1	52.8	82.9
Appearance	—	—	CLEAR	BROWN TINT	SLIGHTLY TURBID	CLOUDY
Odor	—	—	NONE	NONE	NONE	NONE
Containers	250 mL HNO3 1 L Cool 0-6C	—	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL
Sample Time	—	—	1608	0917	1048	1032
Sample Date	—	—	06/29/20	06/30/20	06/30/20	06/30/20

SLURRY DUPLICATE

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenna McDonald. **DATE:** 06/29-30/20.

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	NA	Appendix III	Listed Metals
Depth to Water (ft)	43.81	Dry	22.44	22.41	32.74	Dry
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	10.05	—	35.98	10.74	25.77	—
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.64	—	5.86	1.75	4.20	—
Water Removed From Well (gallons)	11.0	—	14.0	—	10.0	—
Method of Removal	Pump	—	Pump	~~Pump~~	Pump	—
Was Well Purged Dry?	NO	—	YES	—	YES	—
pH (standard units)	8.40	—	8.67	—	8.77	—
Temperature (°C)	22.86	—	20.83	—	20.94	—
Conductivity (µmhos/cc)	1280	—	997	—	1470	—
Turbidity (NTU)	17.8	—	22.1	—	84.8	—
Appearance	CLEAR	—	CLEAR	—	CLEAR	—
Odor	NONE	—	NONE	—	NONE	—
Containers	250 mL HNO3 1 L Cool 0-6C	—	250 mL HNO3 1 L Cool 0-6C	—	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL
Sample Time	0847	—	1531	—	1001	—
Sample Date	06/30/20	—	06/29/20	—	06/30/20	—

LANDFILL

For 2" well multiply by	0.163
For 4" well multiply by	0.653

DUPLICATE

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: KENNY McDONALD. **DATE:** 06/29-30/20.

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	NA	NA	NA	NA	Appendix III	Listed Metals
Depth to Water (ft)	10.24	10.72	25.14	8.89	47.34	26.23
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10	36.71
Height of Water Column (ft.)	48.46	22.82	39.36	34.41	15.76	10.48
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	7.90	3.72	6.42	5.61	2.57	1.71
Water Removed From Well (gallons)	—	—	—	—	4.25	2.75
Method of Removal	—	—	—	—	Pump	Pump
Was Well Purged Dry?	—	—	—	—	YES	YES
pH (standard units)	—	—	—	—	10.87	14.00
Temperature (°C)	—	—	—	—	22.10	22.17
Conductivity (µmhos/cc)	—	—	—	—	1570	4240
Turbidity (NTU)	—	—	—	—	69.4	133
Appearance	—	—	—	—	CLEAR	CLEAR
Odor	—	—	—	—	NONE	NONE
Containers	—	—	—	—	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL
Sample Time	—	—	—	—	0954	0946
Sample Date	—	—	—	—	06/30/20	06/30/20

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald **DATE:** 06/29-30/20

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	NA	Appendix III	Listed Metals
Depth to Water (ft)	66.89	24.62	47.73	14.38	18.11	15.74
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33	36.22	50.34	31.02	44.92	22.94
Height of Water Column (ft.)	4.44	11.60	2.61	16.64	26.81	7.20
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.72	1.89	0.43	2.71	4.37	1.17
Water Removed From Well (gallons)	0.50	—	0.25	—	13.50	4.0
Method of Removal	BAILER	—	BAILER	—	PUMP	PUMP
Was Well Purged Dry?	YES	—	YES	—	NO	NO
pH (standard units)	—	—	—	—	8.75	7.78
Temperature (°C)	—	—	—	—	20.28	20.72
Conductivity (µmhos/cc)	—	—	—	—	1350	1120
Turbidity (NTU)	—	—	—	—	142	21.9
Appearance	—	—	—	—	CLEAR	CLEAR SOME BLACK FLOATING
Odor	—	—	—	—	NONE	SLIGHT SULPHUR
Containers	250 mL HNO3 1 L Cool 0-6C	—	250 mL HNO3 1 L Cool 0-6C	—	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL
Sample Time	—	—	—	—	1451	1508
Sample Date	—	—	—	—	06/29/20	06/29/20

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kerry McDonald **DATE:** 06/29-30/20

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	Listed Metals	Appendix III	Appendix III	Appendix III	Appendix III
Depth to Water (ft)	37.15	16.46	66.40	59.56	62.68	46.56
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.56	18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)	10.41	1.66	12.56	14.65	1.47	11.85
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.70	0.27	2.05	2.39	0.24	1.93
Water Removed From Well (gallons)	5.0	—	2.75	5.25	—	1.50
Method of Removal	Pump	—	Pump	Pump	—	Pump
Was Well Purged Dry?	No	—	Yes	Yes	—	Yes
pH (standard units)	8.31	—	8.48	9.29	—	—
Temperature (°C)	20.16	—	22.08	23.08	—	—
Conductivity (µmhos/cc)	1560	—	9240	1640	—	—
Turbidity (NTU)	108	—	92.9	78.3	—	—
Appearance	Clear	—	Clear	Clear	—	—
Odor	None	—	None	None	—	—
Containers	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C
Sample Time	1433	—	0904	0933	—	—
Sample Date	06/29/20	—	06/30/20	06/30/20	—	—

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald . **DATE:** 09/08/20 .

Well Identification Number	MW-3D	MW-5D	MW-6D	MW-9D	MW-15	
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	
Samples	pH	Sulfate	pH	pH	pH Sulfate	
Depth to Water (ft)	37.16	29.81	33.51	55.43	60.55	
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	62.95	58.42	58.51	63.10	74.21	
Height of Water Column (ft.)	25.79	28.61	25.00	7.67	13.66	
Well Size (I.D.) (inches)	2	2	2	2	2	
Volume of Water in Well (gallons)	4.20	4.66	4.08	1.25	2.23	
Water Removed From Well (gallons)	14.00	12.50	9.00	2.00	5.50	
Method of Removal	Pump	Pump	Pump	Pump	Pump	
Was Well Purged Dry?	No	Yes	Yes	Yes	Yes	
pH (standard units)	7.76	8.16	8.00	8.58	8.86	
Temperature (°C)	19.62	19.31	19.74	20.74	20.13	
Conductivity (µmhos/cc)	997	946	1410	1460	1460	
Turbidity (NTU)	4.4	13.4	109	247	81.2	
Appearance	Clear	Clear	Slightly Turbid	Clear	Slightly Turbid	
Odor	None	None	None	None	Slight Sulphur	
Containers	NA	500 mL Cool 0-6C	NA	NA	500 mL Cool 0-6C	
Sample Time	1247	1413	1307	1324	1351	
Sample Date	9/8/2020	9/8/2020	9/8/2020	9/8/2020	9/8/2020	

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald/Matt Hamilton . **DATE:** 10/20-21/20 .

Well Identification Number	MW-1D	MW-1S	MW-2D	MW-2S	MW-3D	MW-3S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	WQ & Metals	Appendix III	WQ & Metals
Depth to Water (ft)	50.96	25.72	60.17	33.84	37.63	24.70
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.25	37.76	61.80	36.75	62.95	27.21
Height of Water Column (ft.)	7.29	12.04	1.63	2.91	25.32	2.51
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.19	1.96	0.27	0.47	4.13	0.41
Water Removed From Well (gallons)	1.00	----	0.25	1.00	13.00	0.50
Method of Removal	Bailer	----	Pump	Pump	Pump	Pump
Was Well Purged Dry?	Yes	----	Yes	Yes	No	Yes
pH (standard units)	----	----	----	11.41	8.66	----
Temperature (°C)	----	----	----	17.96	18.5	----
Conductivity (µmhos/cc)	----	----	----	2340	1000	----
Turbidity (NTU)	----	----	----	47.7	126	----
Appearance	----	----	----	Brownish Tint	Slightly Turbid	----
Odor	----	----	----	None	None	----
Containers	250 mL HNO3 1 L Cool 0-6C	------	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL 1 L Cool 0-6C
Sample Time	----	----	----	1102	938	----
Sample Date	----	----	----	10/21/2020	10/21/2020	----

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald/Matt Hamilton . **DATE:** 10/20-21/20 .

Well Identification Number	MW-4D	MW-4S	MW-5D	MW-5S	MW-6D	MW-6S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	NA	Appendix III	WQ & Metals
Depth to Water (ft)	43.87	Dry	29.65	24.22	33.81	Dry
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	53.86	32.94	58.42	33.15	58.51	28.20
Height of Water Column (ft.)	9.99	----	28.77	8.93	24.70	----
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	1.63	----	4.69	1.46	4.03	----
Water Removed From Well (gallons)	8.00	----	13.25	----	9.00	----
Method of Removal	Pump	----	Pump	----	Pump	----
Was Well Purged Dry?	No	----	Yes	----	Yes	----
pH (standard units)	8.43	----	8.83	----	8.71	----
Temperature (°C)	17.93	----	17.83	----	18.79	----
Conductivity (µmhos/cc)	1160	----	1310	----	1410	----
Turbidity (NTU)	113	----	70.3	----	211	----
Appearance	Clear	----	Clear	----	Slightly Turbid	----
Odor	None	----	None	----	None	----
Containers	250 mL HNO3 1 L Cool 0-6C	------	250 mL HNO3 1 L Cool 0-6C	------	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL 1 L Cool 0-6C
Sample Time	846	----	920	----	951	----
Sample Date	10/21/2020	----	10/21/2020	----	10/21/2020	----

Landfill Dup

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald/Matt Hamilton . **DATE:** 10/20-21/20 .

Well Identification Number	MW-7D	MW-7S	MW-8D	MW-8S	MW-9D	MW-9S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	NA	NA	NA	NA	Appendix III	WQ & Metals
Depth to Water (ft)	12.45	12.74	31.25	10.29	55.82	27.53
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	58.70	33.54	64.50	43.30	63.10	36.71
Height of Water Column (ft.)	46.25	20.80	33.25	33.01	7.28	9.18
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	7.54	3.39	5.42	5.38	1.19	1.50
Water Removed From Well (gallons)	----	----	----	----	2.25	2.00
Method of Removal	----	----	----	----	Pump	Pump
Was Well Purged Dry?	----	----	----	----	Yes	Yes
pH (standard units)	----	----	----	----	8.91	14.00
Temperature (°C)	----	----	----	----	18.83	18.97
Conductivity (µmhos/cc)	----	----	----	----	1530	3880
Turbidity (NTU)	----	----	----	----	90.8	80.6
Appearance	----	----	----	----	Slightly Turbid	Amber Color
Odor	----	----	----	----	None	None
Containers	------	------	------	------	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL 1 L Cool 0-6C
Sample Time	----	----	----	----	1004	1010
Sample Date	----	----	----	----	10/21/2020	10/21/2020

Slurry Dup

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald/Matt Hamilton . **DATE:** 10/20-21/20 .

Well Identification Number	MW-10D	MW-10S	MW-11D	MW-11S	MW-12D	MW-12S
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	NA	Appendix III	NA	Appendix III	WQ & Metals
Depth to Water (ft)	66.51	25.52	47.63	16.14	19.29	19.13
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	71.33	36.22	50.34	31.02	44.92	22.94
Height of Water Column (ft.)	4.82	10.70	2.71	14.88	25.63	3.81
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.79	1.74	0.44	2.43	4.18	0.62
Water Removed From Well (gallons)	----	----	----	----	13.00	2.00
Method of Removal	----	----	----	----	Pump	Pump
Was Well Purged Dry?	----	----	----	----	No	No
pH (standard units)	----	----	----	----	9.09	7.35
Temperature (°C)	----	----	----	----	17.45	18.23
Conductivity (µmhos/cc)	----	----	----	----	1420	1070
Turbidity (NTU)	----	----	----	----	106	42.0
Appearance	----	----	----	----	Slightly Turbid	Clear
Odor	----	----	----	----	None	Sulphur
Containers	250 mL HNO3 1 L Cool 0-6C	------	250 mL HNO3 1 L Cool 0-6C	------	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL 1 L Cool 0-6C
Sample Time	----	----	----	----	1400	1354
Sample Date	----	----	----	----	10/20/2020	10/20/2020

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald/Matt Hamilton . **DATE:** 10/20-21/20 .

Well Identification Number	MW-13D	MW-13S	MW-14	MW-15	MW-16	MW-17
Activities	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
Samples	Appendix III	WQ & Metals	Appendix III	Appendix III	Appendix III	Appendix III
Depth to Water (ft)	42.51	17.99	68.60	61.39	62.15	45.41
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	47.56	18.12	78.96	74.21	64.15	58.41
Height of Water Column (ft.)	5.05	0.13	10.36	12.82	2.00	13.00
Well Size (I.D.) (inches)	2	2	2	2	2	2
Volume of Water in Well (gallons)	0.82	0.02	1.69	2.09	0.33	2.12
Water Removed From Well (gallons)	2.00	----	3.00	4.75	----	1.50
Method of Removal	Pump	----	Pump	Pump	----	Pump
Was Well Purged Dry?	Yes	----	Yes	Yes	----	Yes
pH (standard units)	----	----	8.63	11.45	----	----
Temperature (°C)	----	----	17.41	19.23	----	----
Conductivity (µmhos/cc)	----	----	9820	1540	----	----
Turbidity (NTU)	----	----	74.8	93.6	----	----
Appearance	----	----	Clear	Clear	----	----
Odor	----	----	None	None	----	----
Containers	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 125 mL HCL 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C	250 mL HNO3 1 L Cool 0-6C
Sample Time	----	----	906	1023	----	----
Sample Date	----	----	10/21/2020	10/21/2020	----	----

For 2" well multiply by	0.163
For 4" well multiply by	0.653

NORTHEASTERN POWER PLANT
GROUNDWATER SAMPLING DATA FORM

SAMPLED BY: Kenny McDonald . **DATE:** 12/16/20 .

Well Identification Number	MW-3D	MW-6D	MW-9D	MW-15		
Activities	Gauge	Gauge	Gauge	Gauge		
Samples	pH	pH	pH	pH		
Depth to Water (ft)	36.90	33.36	55.46	61.44		
Water Level Elevation (ft. NGVD)						
Measured Depth Total Depth of Well (ft.)	62.95	58.51	63.10	74.21		
Height of Water Column (ft.)	26.05	25.15	7.64	12.77		
Well Size (I.D.) (inches)	2	2	2	2		
Volume of Water in Well (gallons)	4.25	4.10	1.25	2.08		
Water Removed From Well (gallons)	13.00	7.25	2.00	4.75		
Method of Removal	Pump	Pump	Pump	Pump		
Was Well Purged Dry?	No	Yes	Yes	Yes		
pH (standard units)	6.93	7.10	7.46	7.78		
Temperature (°C)	16.21	16.49	16.35	16.03		
Conductivity (µmhos/cc)	1100	1510	1660	1590		
Turbidity (NTU)	189	310	212	215		
Appearance	Clear	Turbid	Turbid	Turbid		
Odor	None	None	None	Sulphur		
Containers	NA	NA	NA	NA		
Sample Time	942	957	1008	1019		
Sample Date	12/16/2020	12/16/2020	12/16/2020	12/16/2020		

For 2" well multiply by	0.163
For 4" well multiply by	0.653

ATTACHMENT B
Laboratory Analytical Reports

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 7/14/2020***

MW-2D LF

Sample Number: 202052-001 **Date Collected: 06/29/2020 16:08** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	251	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.3	mg/L	J	0.5	0.1	CRJ	07/10/2020 01:27	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	11.5	mg/L		0.1	0.03	CRJ	07/10/2020 01:27	EPA 300.1-1997, Rev. 1.0
Fluoride, F	1.91	mg/L		0.2	0.04	CRJ	07/10/2020 01:27	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	1310	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	732	mg/L		10	2	CRJ	07/09/2020 18:23	EPA 300.1-1997, Rev. 1.0

MW-3D LF

Sample Number: 202052-002 **Date Collected: 06/30/2020 10:48** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	362	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.288	mg/L		0.2	0.04	CRJ	07/10/2020 06:51	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	13.7	mg/L		0.04	0.01	CRJ	07/10/2020 06:51	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.77	mg/L		0.06	0.01	CRJ	07/10/2020 06:51	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	680	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	206	mg/L		2	0.3	CRJ	07/09/2020 23:22	EPA 300.1-1997, Rev. 1.0

MW-4D LF

Sample Number: 202052-003 **Date Collected: 06/30/2020 08:47** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	329	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.601	mg/L		0.2	0.04	CRJ	07/09/2020 17:33	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	22.2	mg/L		0.04	0.01	CRJ	07/09/2020 17:33	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.27	mg/L		0.06	0.01	CRJ	07/09/2020 17:33	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	867	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	336	mg/L		5	0.8	CRJ	07/09/2020 17:08	EPA 300.1-1997, Rev. 1.0

MW-5D LF

Sample Number: 202052-004 **Date Collected: 06/29/2020 15:31** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	370	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.1	mg/L	J	0.2	0.04	CRJ	07/10/2020 07:16	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	26.7	mg/L		0.04	0.01	CRJ	07/10/2020 07:16	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.57	mg/L		0.06	0.01	CRJ	07/10/2020 07:16	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	641	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	165	mg/L		2	0.3	CRJ	07/09/2020 23:47	EPA 300.1-1997, Rev. 1.0

MW-6D LF

Sample Number: 202052-005 **Date Collected: 06/30/2020 10:01** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	351	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.3	mg/L	J	0.5	0.1	CRJ	07/10/2020 01:52	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	24.9	mg/L		0.1	0.03	CRJ	07/10/2020 01:52	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.76	mg/L		0.2	0.04	CRJ	07/10/2020 01:52	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	1080	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	533	mg/L		10	2	CRJ	07/09/2020 18:48	EPA 300.1-1997, Rev. 1.0

MW-9D LF

Sample Number: 202052-006 **Date Collected: 06/30/2020 09:54** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	265	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.3	mg/L	J	0.5	0.1	CRJ	07/10/2020 02:17	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	26.2	mg/L		0.1	0.03	CRJ	07/10/2020 02:17	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.95	mg/L		0.2	0.04	CRJ	07/10/2020 02:17	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	1070	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	602	mg/L		10	2	CRJ	07/09/2020 19:13	EPA 300.1-1997, Rev. 1.0

MW-12D LF

Sample Number: 202052-007 **Date Collected: 06/29/2020 14:51** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	120	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.3	mg/L	J	0.5	0.1	CRJ	07/10/2020 03:06	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	15.0	mg/L		0.1	0.03	CRJ	07/10/2020 03:06	EPA 300.1-1997, Rev. 1.0
Fluoride, F	1.92	mg/L		0.2	0.04	CRJ	07/10/2020 03:06	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	945	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	602	mg/L		10	2	CRJ	07/09/2020 19:38	EPA 300.1-1997, Rev. 1.0

MW-13D LF

Sample Number: 202052-008 **Date Collected: 06/29/2020 14:33** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	503	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	< 0.1	mg/L	U	0.5	0.1	CRJ	07/10/2020 05:36	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	4.68	mg/L		0.1	0.03	CRJ	07/10/2020 05:36	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.32	mg/L		0.2	0.04	CRJ	07/10/2020 05:36	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	1100	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	476	mg/L		10	2	CRJ	07/09/2020 20:28	EPA 300.1-1997, Rev. 1.0

MW-14 LF

Sample Number: 202052-009 **Date Collected: 06/30/2020 09:04** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	893	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	8.42	mg/L		5	1	CRJ	07/09/2020 20:53	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	2980	mg/L		10	3	CRJ	07/10/2020 12:46	EPA 300.1-1997, Rev. 1.0
Fluoride, F	3.97	mg/L		2	0.4	CRJ	07/09/2020 20:53	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	5370	mg/L		100	40	HRF	07/02/2020	SM 2540C-2011
Sample was reanalyzed on 7-8-2020 to confirm the results. Reanalysis occurred after the hold time was expired. Sdw70920 The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	189	mg/L		10	2	CRJ	07/09/2020 20:53	EPA 300.1-1997, Rev. 1.0

MW-15 LF

Sample Number: 202052-010 **Date Collected: 06/30/2020 09:33** **Date Received: 7/2/2020**

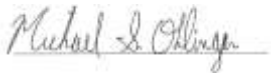
Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	129	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.3	mg/L	J	0.5	0.1	CRJ	07/10/2020 03:31	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	17.9	mg/L		0.1	0.03	CRJ	07/10/2020 03:31	EPA 300.1-1997, Rev. 1.0
Fluoride, F	1.55	mg/L		0.2	0.04	CRJ	07/10/2020 03:31	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	1100	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	706	mg/L		10	2	CRJ	07/09/2020 21:17	EPA 300.1-1997, Rev. 1.0

Landfill Duplicate LF

Sample Number: 202052-011 **Date Collected: 06/30/2020 08:51** **Date Received: 7/2/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Alkalinity, as CaCO3	328	mg/L		20	5	MGK	07/07/2020 13:50	SM 2320B-2011
Bromide, Br	0.546	mg/L		0.5	0.1	CRJ	07/10/2020 03:56	EPA 300.1-1997, Rev. 1.0
Chloride, Cl	22.3	mg/L		0.1	0.03	CRJ	07/10/2020 03:56	EPA 300.1-1997, Rev. 1.0
Fluoride, F	0.25	mg/L		0.2	0.04	CRJ	07/10/2020 03:56	EPA 300.1-1997, Rev. 1.0
Residue, Filterable, TDS	884	mg/L		50	20	HRF	07/02/2020	SM 2540C-2011
The RPD between the LFB and LFBD exceeds 5%. The LFB is outside of the acceptable lmit of 92.24-105.69%. Hrf07102020								
Sulfate, SO4	361	mg/L		10	2	CRJ	07/09/2020 21:42	EPA 300.1-1997, Rev. 1.0

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.



Michael Ohlinger, Chemist

Email msohlinger@aep.com *Tel.*

Fax 614-836-4168 *Audinet 8-210-*

Chain of Custody Record

202052

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
4001 Bixby Road
Groveport, Ohio 43125
Contacts: Jonathan Barnhill (318-673-3803)
Michael Ohlinger (614-836-4184)

Project Name: NPS LF Semi-Annual CCR Sampling
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenny McDonald

Analysis Turnaround Time (In Calendar Days)
Routine (28 days for Monitoring Wells)

Site Contact:

Date:

For Lab Use Only:
COC/Order #:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO3 — B, Ca, Na, K, Mg	Field-filter 250 mL bottle, then pH<2, HNO3 — dissolved Fe and Mn	1 L bottle, Cool, 0-6°C — TDS, F, Cl, SO_4, and Br, Alkalinity	Three (six every 10th*) 1 L bottles, pH<2, HNO3 — Ra-226, Ra-228	125 mL PTFE lined bottle, pH <2, HCl — HG			Sample Specific Notes:
MW-2D	6/29/2020	1608	GRAB	GW	1				X					
MW-3D	6/30/2020	1048	GRAB	GW	1				X					
MW-4D	6/30/2020	847	GRAB	GW	1				X					
MW-5D	6/29/2020	1531	GRAB	GW	1				X					
MW-6D	6/30/2020	1001	GRAB	GW	1				X					
MW-9D	6/30/2020	954	GRAB	GW	1				X					
MW-12D	6/29/2020	1451	GRAB	GW	1				X					
MW-13D	6/29/2020	1433	GRAB	GW	1				X					
MW-14	6/30/2020	904	GRAB	GW	1				X					
MW-15	6/30/2020	933	GRAB	GW	1				X					
LANDFILL DUPLICATE	6/30/2020	851	GRAB	GW	1				X					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	07/01/20 1100		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			[signature]	7-2-20 9:45

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
Cooler Box Bag Envelope	PONY UPS FedEX USPS
	Other _____

Plant/Customer Northeast **Number of Plastic Containers:** 11

Opened By SM **Number of Glass Containers:** _____

Date/Time 7-2-20 9:45 **Number of Mercury Containers:** _____

Were all temperatures within 0-6°C? (Y) / N or N/A **Initial:** SM (on ice) / no ice

(IR Gun Ser# #2 (192635988), *Expir.* 11/12/2021) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: Route If **RUSH**, who was notified? _____

pH (15 min)	Cr^{+6} (pres) (24 hr)	NO_2 or NO_3 (48 hr)	*ortho*-PO_4 (48 hr)	Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** SM 7-20-20

- Was Add'l Preservative needed? Y / (N) If Yes: By whom & when: _____ (See Prep Book)

Is sample filtration requested? Y / (N) Comments _____ (See Prep Book)

Was the customer contacted? If Yes: Person Contacted: _____

Initial & Date & Time : _____

Lab ID# 202052

Comments: _____

Logged by JAB

Reviewed by MSD

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 9/11/2020***

MW-5D

Sample Number: 202684-001 **Date Collected: 09/08/2020 14:13** **Date Received: 9/9/2020**

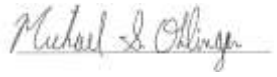
Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	176	mg/L		10	2	CRJ	09/09/2020 17:09	EPA 300.1-1997, Rev. 1.0

MW-15

Sample Number: 202684-002 **Date Collected: 09/08/2020 13:51** **Date Received: 9/9/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Sulfate, SO4	730	mg/L		10	2	CRJ	09/09/2020 17:34	EPA 300.1-1997, Rev. 1.0

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.



Michael Ohlinger, Chemist
Email msohlinger@aep.com *Tel.*
Fax 614-836-4168 *Audinet 8-210-*

Dolan Chemical Laboratory (DCL)
4001 Bixby Road
Groveport, Ohio 43125
Contacts: Jonathan Barnhill (318-673-3803)
Michael Ohlinger (614-836-4184)

624

Chain of Custody Record

202684

Program: 2 of 2

Project Name: NPS LF 2 of 2 Sampling
Contact Name: Jill Parker-Witt
Contact Phone: 318-673-3816
Sampler(s): Kenny McDonald

Site Contact:

Date:

For Lab Use Only:
COC/Order #:

Analysis Turnaround Time (in Calendar Days)
Routine (28 days for Monitoring Wells)

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO3 B, Ca, Na, K, Mg	Field-filter 250 mL bottle, then pH<2, HNO3 dissolved Fe and Mn	500 mL bottle, Cool, 0-6°C SO_4	Three (six every 10th*) 1 L bottles, pH<2, HNO3 Ra-226, Ra-228	125 mL PTFE lined bottle, pH <2, HCl HG			Sample Specific Notes:
MW-5D	09/08/20	1413	Grab	GW	1				X					
MW-15	09/08/20	1351	Grab	GW	1				X					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

* Six 1L Bottles must be collected for Radium for every 10th sample.

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: EAGLE	Date/Time: 1440	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time: 9-9-20 11:47

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY UPS FedEX USPS
	Other _____

Plant/Customer Northeastern Station **Number of Plastic Containers:** 2

Opened By Melissa **Number of Glass Containers:** _____

Date/Time 09-09-20 11:47 **Number of Mercury Containers:** _____

Were all temperatures within 0-6°C? (Y) / N or N/A **Initial:** MG-K (on ice) / no ice

(IR Gun Ser# #2 (192635988), Expir. 11/12/2021) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: _____ If **RUSH**, who was notified? _____

pH (15 min) Cr^{+6} (pres) (24 hr) NO_2 or NO_3 (48 hr) *ortho*-PO_4 (48 hr) Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N Comments _____

Were samples labeled properly? (Y) / N Comments _____

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** MG-K 09-09-20

- Was Add'l Preservative needed? Y / (N) If Yes: By whom & when: _____ (See Prep Book)

Is sample filtration requested? Y / (N) Comments _____ (See Prep Book)

Was the customer contacted? If Yes: Person Contacted: _____

Lab ID# 202684 Initial & Date & Time : _____

Comments: _____

Logged by MG-K _____

Reviewed by MSO _____

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

Form REP-703
Rev. 1, 11/2013

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
T: 614-836-4221, Audinet 210-4221
F: 614-836-4168, Audinet 210-4168
http://aepenv/labs

Water Analysis

Location: Northeastern Station ***Report Date: 11/2/2020***

MW-3D

Sample Number: 203064-001 **Date Collected: 10/21/2020 09:38** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.833	mg/L		0.05	0.02	JDB	10/28/2020 19:35	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	120	mg/L		0.3	0.1	DAM	10/30/2020 10:22	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	41.4	mg/L		0.1	0.02	DAM	10/30/2020 10:22	EPA 200.7-1994, Rev. 4.4
Potassium, K	1.84	mg/L		1	0.2	DAM	10/30/2020 10:22	EPA 200.7-1994, Rev. 4.4
Sodium, Na	59.8	mg/L		0.5	0.1	DAM	10/30/2020 10:22	EPA 200.7-1994, Rev. 4.4

MW-4D

Sample Number: 203064-002 **Date Collected: 10/21/2020 08:46** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.761	mg/L		0.05	0.02	JDB	10/28/2020 19:40	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	163	mg/L		0.3	0.1	DAM	10/30/2020 10:26	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	21.1	mg/L		0.1	0.02	DAM	10/30/2020 10:26	EPA 200.7-1994, Rev. 4.4
Potassium, K	1.37	mg/L		1	0.2	DAM	10/30/2020 10:26	EPA 200.7-1994, Rev. 4.4
Sodium, Na	70.2	mg/L		0.5	0.1	DAM	10/30/2020 10:26	EPA 200.7-1994, Rev. 4.4

MW-5D

Sample Number: 203064-003 **Date Collected: 10/21/2020 09:20** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.469	mg/L		0.05	0.02	JDB	10/28/2020 19:46	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	122	mg/L		0.3	0.1	DAM	10/30/2020 10:00	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	43.6	mg/L		0.1	0.02	DAM	10/30/2020 10:00	EPA 200.7-1994, Rev. 4.4
Potassium, K	1	mg/L	J	1	0.2	DAM	10/30/2020 10:00	EPA 200.7-1994, Rev. 4.4
Sodium, Na	32.7	mg/L		0.5	0.1	DAM	10/30/2020 10:00	EPA 200.7-1994, Rev. 4.4

MW-6D

Sample Number: 203064-004 **Date Collected: 10/21/2020 09:51** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	3.00	mg/L		0.05	0.02	JDB	10/28/2020 19:51	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	170	mg/L		0.3	0.1	DAM	10/30/2020 10:30	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	32.5	mg/L		0.1	0.02	DAM	10/30/2020 10:30	EPA 200.7-1994, Rev. 4.4
Potassium, K	2.94	mg/L		1	0.2	DAM	10/30/2020 10:30	EPA 200.7-1994, Rev. 4.4
Sodium, Na	126	mg/L		0.5	0.1	DAM	10/30/2020 10:30	EPA 200.7-1994, Rev. 4.4

MW-9D

Sample Number: 203064-005 **Date Collected: 10/21/2020 10:04** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	6.12	mg/L		0.05	0.02	JDB	10/28/2020 19:56	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	129	mg/L		0.3	0.1	DAM	10/30/2020 10:34	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	54.8	mg/L		0.1	0.02	DAM	10/30/2020 10:34	EPA 200.7-1994, Rev. 4.4
Potassium, K	3.69	mg/L		1	0.2	DAM	10/30/2020 10:34	EPA 200.7-1994, Rev. 4.4
Sodium, Na	147	mg/L		0.5	0.1	DAM	10/30/2020 10:34	EPA 200.7-1994, Rev. 4.4

MW-12D

Sample Number: 203064-006 **Date Collected: 10/21/2020 14:00** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	7.19	mg/L		0.05	0.02	JDB	10/28/2020 20:01	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	118	mg/L		0.3	0.1	DAM	10/30/2020 10:38	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	9.63	mg/L		0.1	0.02	DAM	10/30/2020 10:38	EPA 200.7-1994, Rev. 4.4
Potassium, K	2.20	mg/L		1	0.2	DAM	10/30/2020 10:38	EPA 200.7-1994, Rev. 4.4
Sodium, Na	231	mg/L		0.5	0.1	DAM	10/30/2020 10:38	EPA 200.7-1994, Rev. 4.4

MW-14

Sample Number: 203064-007 **Date Collected: 10/21/2020 09:06** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	1.39	mg/L		0.05	0.02	JDB	10/28/2020 20:06	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	64.3	mg/L		0.3	0.1	DAM	10/30/2020 10:42	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	42.5	mg/L		0.1	0.02	DAM	10/30/2020 10:42	EPA 200.7-1994, Rev. 4.4
Potassium, K	8.92	mg/L		1	0.2	DAM	10/30/2020 10:42	EPA 200.7-1994, Rev. 4.4
Sodium, Na	1760	mg/L		5	1	DAM	10/30/2020 10:42	EPA 200.7-1994, Rev. 4.4

MW-15

Sample Number: 203064-008 **Date Collected: 10/21/2020 10:23** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	7.79	mg/L		0.05	0.02	JDB	10/28/2020 20:11	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	117	mg/L		0.3	0.1	DAM	10/30/2020 10:49	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	36.3	mg/L		0.1	0.02	DAM	10/30/2020 10:49	EPA 200.7-1994, Rev. 4.4
Potassium, K	2.34	mg/L		1	0.2	DAM	10/30/2020 10:49	EPA 200.7-1994, Rev. 4.4
Sodium, Na	182	mg/L		0.5	0.1	DAM	10/30/2020 10:49	EPA 200.7-1994, Rev. 4.4

Landfill Duplicate

Sample Number: 203064-009 **Date Collected: 10/21/2020 08:56** **Date Received: 10/26/2020**

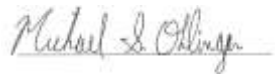
Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.772	mg/L		0.05	0.02	JDB	10/28/2020 20:16	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	163	mg/L		0.3	0.1	DAM	10/30/2020 10:52	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	20.9	mg/L		0.1	0.02	DAM	10/30/2020 10:52	EPA 200.7-1994, Rev. 4.4
Potassium, K	1.36	mg/L		1	0.2	DAM	10/30/2020 10:52	EPA 200.7-1994, Rev. 4.4
Sodium, Na	69.0	mg/L		0.5	0.1	DAM	10/30/2020 10:52	EPA 200.7-1994, Rev. 4.4

Landfill Equipment Blank

Sample Number: 203064-010 **Date Collected: 10/21/2020 09:25** **Date Received: 10/26/2020**

Parameter	Result	Units	Data Qual	RL	MDL	Analysis By	Analysis Date/Time	Method
Boron, B	0.04	mg/L	J	0.05	0.02	JDB	10/28/2020 20:21	EPA 200.8-1994, Rev. 5.4
Calcium, Ca	0.3	mg/L	J	0.3	0.1	DAM	10/30/2020 10:55	EPA 200.7-1994, Rev. 4.4
Magnesium, Mg	0.08	mg/L	J	0.1	0.02	DAM	10/30/2020 10:55	EPA 200.7-1994, Rev. 4.4
Potassium, K	0.3	mg/L	J	1	0.2	DAM	10/30/2020 10:55	EPA 200.7-1994, Rev. 4.4
Sodium, Na	3.15	mg/L		0.5	0.1	DAM	10/30/2020 10:55	EPA 200.7-1994, Rev. 4.4

U: Analyte was analyzed and not detected at or above adjusted Method Detection Limit
J: Analyte was positively identified, though the quantitation was below Reporting Limit.



Michael Ohlinger, Chemist

Email msohlinger@aep.com *Tel.*

Fax 614-836-4168 *Audinet 8-210-*

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
4001 Bixby Road
Groveport, Ohio 43125
Contacts: Jonathan Barnhill (318-673-3803)
Michael Ohlinger (614-836-4184)

Project Name: NPS LF Semi-Annual CCR Sampling

Contact Name: Jill Parker-Witt

Contact Phone: 318-673-3816

Sampler(s): Kenny McDonald

Analysis Turnaround Time (in Calendar Days)
Routine (28 days for Monitoring Wells)

Site Contact:

Date:

For Lab Use Only:
COC/Order #: 203264

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	250 mL bottle, pH<2, HNO3 — B, Ca, Na, K, Mg	Field-filter 250 mL bottle, then pH<2, HNO3 — dissolved Fe and Mn	1 L bottle, Cool, 0-6°C — TDS, F, Cl, SO_4, and Br, Alkalinity	Three (six every 10th*) 1 L bottles, pH<2, HNO3 — Ra-226, Ra-228	125 mL PTFE lined bottle, pH <2, HCl — Hg			Sample Specific Notes:
MW-3D	10/21/2020	938	GRAB	GW	1		X							
MW-4D	10/21/2020	846	GRAB	GW	1		X							
MW-5D	10/21/2020	920	GRAB	GW	1		X							
MW-6D	10/21/2020	951	GRAB	GW	1		X							
MW-9D	10/21/2020	1004	GRAB	GW	1		X							
MW-12D	10/20/2020	1400	GRAB	GW	1		X							
MW-14	10/21/2020	906	GRAB	GW	1		X							
MW-15	10/21/2020	1023	GRAB	GW	1		X							
LANDFILL DUPLICATE	10/21/2020	856	GRAB	GW	1		X							
LANDFILL EQUIPMENT BLANK	10/21/2020	925	GRAB	GW	1		X							
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____; F= filter in field							4	F4	1	4				

** Six 1L Bottles must be collected for Radium for every 10th sample.*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
[signature]	EAGLE	10/22/20 1300		
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Date/Time:
			[signature]	10/26/2020

AEP WATER & WASTE SAMPLE RECEIPT FORM

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY UPS FedEX (USPS)
Northeastern	Other _____

Plant/Customer Flint Oc — **Number of Plastic Containers:** _____

Opened By JAB — **Number of Glass Containers:** _____

Date/Time JABeach 2:30 pm — **Number of Mercury Containers:** _____

Were all temperatures within 0-6°C? Y / N or (N/A) **Initial:** _____ on ice / (no ice)

(IR Gun Ser# #2 (192635988), *Expir.* 11/12/2021) - If No, specify each deviation: _____

Was container in good condition? (Y) / N Comments _____

Was Chain of Custody received? (Y) / N Comments _____

Requested turnaround: 28 days If **RUSH**, who was notified? _____

pH (15 min)	Cr^{+6} (pres) (24 hr)	NO_2 or NO_3 (48 hr)	*ortho*-PO_4 (48 hr)	Hg-diss (pres) (48 hr)

Was COC filled out properly? (Y) / N JAB 10/27/20 Comments ~~This one has NPSLF Semi. Annual CCR. Please put plant name somewhere on the~~ JAB 10/27/20

Were samples labeled properly? Y (N) Comments No plant name or date/time reference

Were correct containers used? (Y) / N Comments _____

Was pH checked & Color Coding done? (Y) / N or N/A **Initial & Date:** MSO 10/26/2020

- Was Add'l Preservative needed? Y / (N) If Yes: By whom & when: _____ (See Prep Book)

Is sample filtration requested? Y / (N) Comments _____ (See Prep Book)

Was the customer contacted? If Yes: Person Contacted: _____

Lab ID# 203064 Initial & Date & Time : _____

Comments: _____

Logged by MSO _____

_____

Reviewed by JAB _____

pH paper Cat# LRS-4801 Lot# X00RWD621

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

APPENDIX IV

ODEQ 2020 Correspondence

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

February 27, 2020

Ms. Jill Parker-Witt, P.E.
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

Re: Annual Groundwater Monitoring Report – Landfill
Public Service Company of Oklahoma-Northeastern Power Station Ash Landfill
Rogers County
Solid Waste Permit No. 3566010

Dear Ms. Parker-Witt:

On January 30, 2020, the Department of Environmental Quality (DEQ) received the Annual Groundwater Monitoring Report – Landfill CCR Management Unit (Report) for Northeastern Power Station Landfill (NPS). Oklahoma Administrative Code (OAC) 252:517-9-1(e) requires NPS prepare the annual groundwater monitoring and corrective action report to document the status of the coal combustion residual (CCR) landfill. The Report is to be submitted to DEQ for review and approval per OAC 252:517-9-1(g).

OAC 252:517-9-4(e) requires NPS to establish background groundwater quality for each constituent of concern. NPS currently does not have a viable background monitoring well for the landfill. In 2019, NPS investigated two monitoring wells, SP-6 and SP-7, for use as possible upgradient monitoring wells but neither were deemed suitable. NPS is continuing to investigate the site for a potential location to install an acceptable background monitoring well. On February 25, 2020, NPS submitted a drilling plan as part of the investigation which will be evaluated and responded to under separate correspondence. Intra-well statistical analyses are currently used to determine if a statistically significant increase (SSI) has occurred in any downgradient monitoring well.

In May and October 2018, an SSI was determined then confirmed for fluoride in MW-15. An alternate source demonstration (ASD) for fluoride in MW-15 was submitted which attributed the SSI to a laboratory cause. The ASD was accepted by DEQ in a letter dated March 18, 2019.

Semi-annual sampling events occurred on February 27, 2019 and August 26, 2019 under the detection monitoring program. Both Appendix A and Appendix B parameters were evaluated. No SSI was determined for any constituent in either semi-annual sampling event in 2019.

The Report is accepted as submitted. If you have any questions, please contact Ms. Cynthia Hailes, P.E. at (405) 702-5114.

Sincerely,

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/ckh

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

June 30, 2020

Ms. Jill Parker Witt
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

Re: Closure and Post-Closure Cost Estimates – Northeastern Power Station Coal Combustion Residuals (CCR) Landfill: Permit Number: 3566010; and
CCR Surface Impoundment (Bottom Ash Pond):
Public Service Company of Oklahoma-Northeastern Power Station
Rogers County

Dear Ms. Parker-Witt:

On June 5, 2020, the Oklahoma Department of Environmental Quality (DEQ) received the closure and post-closure cost updates by electronic mail from American Electric Power (AEP) for the Coal Combustion Residuals (CCR) Ash Landfill and Bottom Ash Pond. On June 12, 2020, AEP submitted revised cost estimates by electronic mail for the landfill.

After review, DEQ has determined the following closure and post-closure cost estimates are acceptable:

Bottom Ash Pond:

Closure:	$9,568,583.34
Post-Closure:	$1,371,740.92
Total:	$10,940,324.26

Landfill (Permit No. 3566010):

Closure:	$4,916,405.49
Post-Closure:	$6,276,772.57
Total:	$11,193,178.06

Please update your financial assurance accordingly. If you have any questions concerning the closure and post-closure cost estimates, please contact Ms. Cindy Hailes at (405) 702-5114 or cindy.hailes@deq.ok.gov.

Sincerely,

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/ckh

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

October 13, 2020

Ms. Jill Parker-Witt, P.E.
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

Re: Annual Fugitive Dust Control Report
Public Service Company of Oklahoma
Northeastern Power Station Ash Landfill and Bottom Ash Pond
Rogers County
Solid Waste Permit No. 3566010

Dear Ms. Parker-Witt:

On September 29, 2020, by email, the Department of Environmental Quality (DEQ) received the Annual Fugitive Dust Control Report (Report) from American Electric Power - Northeastern Power Station (AEP-NPS). Oklahoma Administrative Code (OAC) 252:517-13-1(c) requires a Coal Combustion Residuals (CCR) fugitive dust control report be submitted annually to DEQ then placed in the facility's operating record in accordance with OAC 252:517-19-1(g)(2). The report must contain a description of the actions to control fugitive CCR dust, a record of all citizen's complaints and a summary of any corrective measures taken. The Report encompasses actions taken by AEP-NPS to control CCR fugitive dust from September 30, 2019 through September 30, 2020.

AEP-NPS is incorporating the coal-fired power unit (Unit 3) into the facility name in Section 2.1; but is not currently pursuing a formal name change. AEP-NPS employs operational and mechanical methods with routine watering to control fugitive dust emissions within the facility. No citizen complaints were received and no corrective measures were taken during the reporting period. Both the Report and the Fugitive Dust Control Plan have been placed in the facility operating record and the publicly accessible internet site.

DEQ accepts the Report as submitted. If you have any questions, please contact Ms. Cindy Hailes at (405) 702-5114 or at cindy.hailes@deq.ok.gov.

Sincerely,

Hillary Young

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/ckh

RECEIVED NOV 0 9 2020

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

October 13, 2020

Ms. Jill Parker-Witt, P.E.
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

Re: Fugitive Dust Control Plan - Revision 5
Public Service Company of Oklahoma
Northeastern Power Station Ash Landfill and Bottom Ash Pond
Rogers County
Solid Waste Permit No. 3566010

Dear Ms. Parker-Witt:

On September 18, 2020, the Department of Environmental Quality (DEQ) received the Fugitive Dust Control Plan – Revision 5 (Plan), by email, from Northeastern Power Station (NPS). Supplemental information was received by email on September 29, 2020. Oklahoma Administrative Code (OAC) 252:517-13-1(b)(6) and (b)(8) require NPS to prepare and submit to DEQ an amended Coal Combustion Residuals (CCR) fugitive dust control plan, when necessary, then place it in the facility's operating record in accordance with OAC 252:517-19-1(g)(2) and on the facility's publicly accessible internet site as required by OAC 252:517-19-3(g).

NPS revised the 2019 plan to change the facility operator name in Section 2.2, to Northeast Power Station Unit 3. The facility owner contact person was also changed in Section 2.2. In Section 3.3, some new activities were added to the CCR impoundment, also known as the bottom ash pond (BAP).

DEQ accepts the Plan as submitted. If you have any questions, please contact Ms. Cindy Hailes at (405) 702-5114 and cindy.hailes@deq.ok.gov.

Sincerely,

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/ckh