

Annual Groundwater Monitoring Report

Southwestern Electric Power Company

Welsh Power Plant

Landfill

CN 602843245; RN100213370

Registration No: CCR 110

1187 Country Road 4865

Titus County

Pittsburg, Texas

January 31, 2025

Prepared by:

American Electric Power Service Corporation

1 Riverside Plaza

Columbus, Ohio 43215



An **AEP** Company

BOUNDLESS ENERGY™

Table of Contents

	<u>Page</u>
I. Overview.....	1
II. Groundwater Monitoring Well Locations and Identification Numbers.....	3
III. Monitoring Wells Installed or Decommissioned	3
IV. Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction and Discussion.....	4
V. Groundwater Quality Data Statistical Analysis	4
VI. Alternate Source Demonstrations completed.....	4
VII. Discussion About Transition Between Monitoring Requirements or Alternate Monitoring Frequency.....	4
VIII. Other Information Required.....	5
IX. Description of Any Problems Encountered and Actions Taken	5
X. A Projection of Key Activities for the Upcoming Year.....	5

Appendix 1: Groundwater Data Tables and Figures

Appendix 2: Statistical Analyses

Appendix 3: Alternative Source Demonstrations - NA

Appendix 4: Notices for Monitoring Program Transitions - NA

Appendix 5: Well Installation/Decommissioning Logs- NA

Appendix 6: Groundwater monitoring field sheets and laboratory reports

Abbreviations:

ASD - Alternate Source Demonstration

CCR – Coal Combustion Residual

GWPS - Groundwater protection standards

LF – Landfill

SSI - Statistically Significant Increase

SSL – Statistically Significant Level

TCEQ – Texas Commission on Environmental Quality

I. Overview

This *Annual Groundwater Monitoring Report* (Report) has been prepared to report the status of activities for the preceding year for an existing Coal Combustion Residual (CCR) unit at Southwestern Electric Power Company's (SWEPCO's), a wholly owned subsidiary of American Electric Power Company (AEP), Welsh Power Plant. The Texas Commission on Environmental Quality's (TCEQ's) CCR rule requires that the Annual Groundwater Monitoring Report be posted to the operating record for the preceding year no later than January 31, 2025.

In general, the following activities were completed:

- At the start of the current annual reporting period, the LF was operating under the Assessment monitoring program.
- At the end of the current annual reporting period, the LF was operating under the Assessment monitoring program.
- The LF initiated an assessment monitoring program on April 13, 2018.
- Groundwater samples and elevations were collected for AD-1, AD-5, AD-17, AD-11, AD-13, and AD-14 and analyzed for Appendix III and IV constituents, as specified in 30 TAC §352.951*et seq.* and AEP's *Groundwater Sampling and Analysis Plan (2021)*.
- Annual groundwater sampling event was conducted in February 2024;
- First semi-annual groundwater sampling event was conducted in April 2024:
 - SSIs above background were identified for:
 - Boron at AD-11, AD-13, and AD-14
 - Fluoride at AD-11 and AD-13
 - pH at AD-11 and AD-14
 - No SSLs above GWPS were identified.
- Second semi-annual groundwater sampling event was conducted in September 2024:
 - SSIs above background were identified for:
 - Boron at AD-11 and AD-14
 - Fluoride at AD-11
 - pH at AD-11 and AD-14
 - No SSLs above GWPS were identified.

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 LF CCR unit, all groundwater monitoring wells and monitoring well identification numbers;
- 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 and whether the sample was collected as part of assessment monitoring programs is included in Appendix 1;
- Statistical comparison of monitoring data to determine if there have been SSI(s) and SSL(s) (Attached as Appendix 2, where applicable);
- A discussion of whether any alternate source demonstrations were performed, and the conclusions (Attached as Appendix 3, where applicable);
- A summary of any transition between monitoring programs or an alternate monitoring frequency (Appendix 4).
- Identification of any monitoring wells that were installed, or decommissioned during the preceding year, along with a statement as to why that happened (Attached as Appendix 5, where applicable); and
- Other information required to be included in the annual report such as field sheets, analytical reports, etc. (Appendix 6)

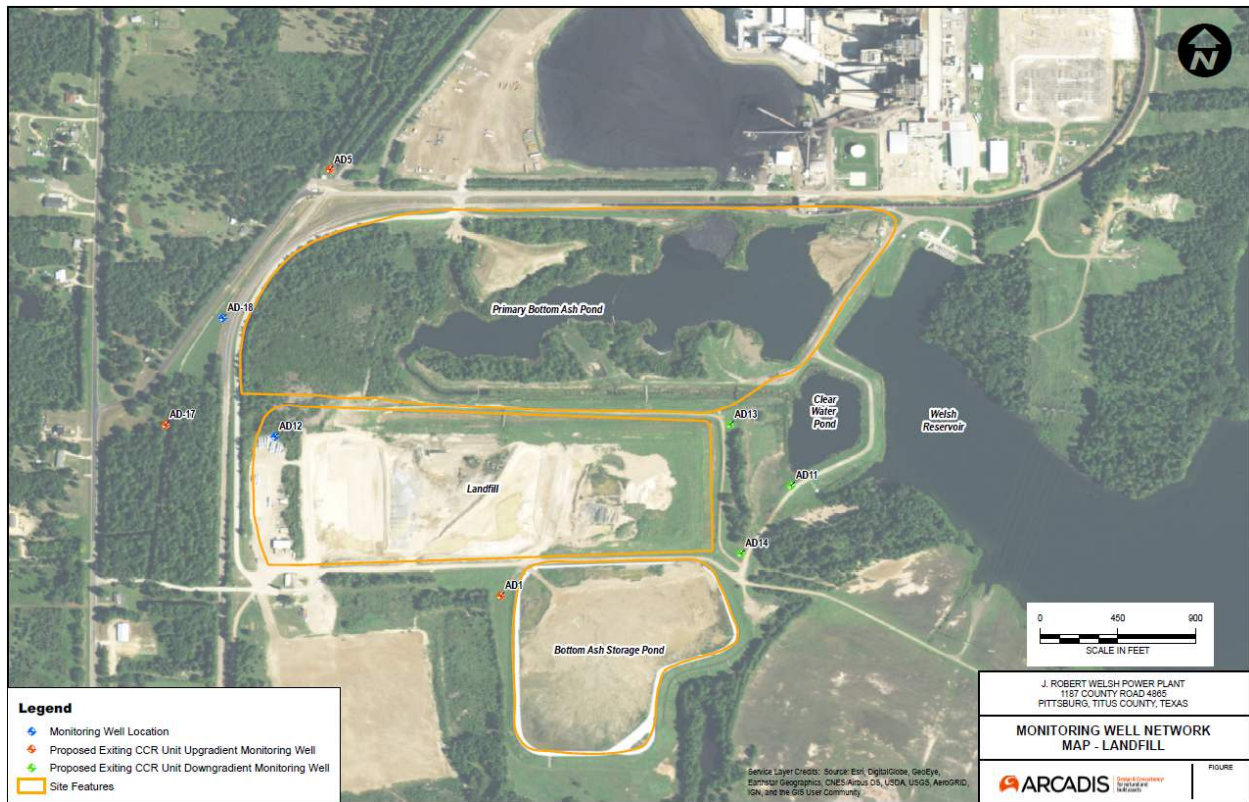
In addition, this report summarizes key actions completed, and where applicable, describes any problems encountered and actions taken to resolve those problems. The report includes a projection of key activities for the upcoming year.

II. Groundwater Monitoring Well Locations and Identification Numbers

The below figure depicts the PE-certified groundwater monitoring network for the Landfill (LF), the monitoring well locations, and their corresponding identification numbers.

LF Monitoring Wells	
Background	Down Gradient
AD-1	AD-11
AD-5	AD-13
AD-17	AD-14

Note: AD-18 is used for gauging purposes



III. Monitoring Wells Installed or Decommissioned

There were no groundwater monitoring wells installed or decommissioned during this reporting period.

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

Groundwater samples and elevations were collected for AD-1, AD-5, AD-17, AD-11, AD-13, and AD-14 and analyzed for Appendix III and IV constituents, as specified in 30 TAC §352.951 *et seq.* and AEP's *Groundwater Sampling and Analysis Plan (2021)*.

Appendix 1 contains potentiometric maps with the static water elevation, groundwater flow direction for each monitoring event, groundwater elevation data summary, tables showing groundwater velocity, and all the groundwater quality data collected to date under 30 TAC 352.

V. Groundwater Quality Data Statistical Analysis

Appendix 2 contains the statistical analysis reports available for this reporting period.

The annual sampling event for the compliance wells for the Appendix III and IV constituents was conducted February 26, 2024, and satisfies the requirement of 30 TAC 352.951.

The 1st semi-annual groundwater sampling event was conducted April 1-2, 2024, with statistical evaluation certified July 17, 2024:

- SSIs above background were identified for:
 - Boron at AD-11, AD-13, and AD-14
 - Fluoride at AD-11 and AD-13
 - pH at AD-11 and AD-14
- No SSLs above GWPS were identified.

The 2nd semi-annual groundwater sampling event was conducted September 9-10, 2024, with statistical evaluation certified December 20, 2024:

- SSIs above background were identified for:
 - Boron at AD-11 and AD-14
 - Fluoride at AD-11
 - pH at AD-11 and AD-14
- No SSLs above GWPS were identified.

VI. Alternate Source Demonstrations completed

No ASDs were conducted for this reporting period.

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

As of this annual groundwater report, the CCR Unit remains in assessment monitoring and will be sampled on a semi-annual basis for statistical analysis.

VIII. Other Information Required

Field sheets and laboratory reports are in Appendix 6.

IX. Description of Any Problems Encountered and Actions Taken

No significant problems were encountered.

X. A Projection of Key Activities for the Upcoming Year

- Conducted the annual groundwater sampling event for all constituents listed in 30 TAC 352 Appendix III and IV constituents;
- Assessment monitoring will continue on a semiannual groundwater sampling schedule for 30 TAC 352 Appendix III and IV constituents;
- Evaluation of the assessment monitoring results from a statistical analysis viewpoint, looking for SSIs above background levels as well as SSLs above GWPS;
- If needed, ASDs will be conducted to evaluate if the unit can remain in assessment monitoring or if the unit will move into assessment of corrective measures;
- Responding to any new data received considering TCEQ's CCR rule requirements; and
- Preparation of the next annual groundwater report.

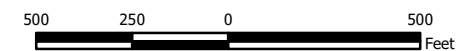
APPENDIX 1

Potentiometric maps and Tables that follow show 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
 - Groundwater Elevation Contour
 - Groundwater Elevation Contour (Inferred)
 - Approximate Groundwater Flow Direction
 - CCR Units

- Notes**
1. Monitoring well coordinates and water level data (collected on February 26, 2024) provided by AEP.
 2. Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis 2022).
 3. Groundwater elevation units are feet above mean sea level (ft amsl).
 4. Satellite imagery provided by ESRI (updated February 19, 2024).



Beth Ann Gross
 August 19, 2024
 Geosyntec Consultants, Inc.
 Texas Firm Registration
 No. 1182



**Groundwater Potentiometric Map
 February 2024**

AEP Welsh Power Plant
 Cason, Texas

Geosyntec
 consultants

Columbus, Ohio

2024/07/16

Figure
1



- Legend**
- Groundwater Monitoring Well
 - Groundwater Elevation Contour
 - Groundwater Elevation Contour (Inferred)
 - Approximate Groundwater Flow Direction
 - CCR Units

- Notes**
1. Monitoring well coordinates and water level data (collected on April 1 and 2, 2024) provided by AEP.
 2. AD-6 was not gauged during the April 2024 event
 3. Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis 2022).
 4. Groundwater elevation units are feet above mean sea level (ft amsl).
 5. Satellite imagery provided by ESRI (updated February 19, 2024).

500 250 0 500
Feet

Beth Ann Gross

August 19, 2024
Geosyntec Consultants, Inc.
Texas Firm Registration
No. 1182


Groundwater Potentiometric Map April 2024	
AEP Welsh Power Plant Cason, Texas	
	Figure 2
Columbus, Ohio	2024/06/14



- Legend**
- Groundwater Monitoring Well
 - Groundwater Elevation Contour
 - Groundwater Elevation Contour (Inferred)
 - Approximate Groundwater Flow Direction
 - CCR Units

- Notes**
1. Monitoring well coordinates and water level data (water levels collected on September 8, 9, and 10, 2024) provided by AEP.
 2. Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation (Arcadis 2022).
 3. Groundwater elevation units are feet above mean sea level (ft amsl).
 4. Satellite imagery provided by ESRI (updated February 19, 2024).

500 250 0 500
Feet



Beth Ann Gross

December 23, 2024

Geosyntec Consultants, Inc.
Texas Firm Registration No. 1182

**Groundwater Potentiometric Map
September 2024**

AEP Welsh Power Plant
Cason, Texas

Geosyntec
consultants

Figure

3

Columbus, Ohio

2024/12/04

**Table 1. Groundwater Elevation Data Summary
Welsh Power Plant**

Unit	All Units			Bottom Ash Storage Pond			Primary Bottom Ash Pond			Landfill		
Gradient	Upgradient			Downgradient			Downgradient			Downgradient		
Well	AD-1	AD-5	AD-17	AD-3	AD-4C	AD-16R*	AD-8	AD-9	AD-15	AD-11	AD-13	AD-14
Mar-2016	342.83	338.04	334.64	325.12	326.19	337.09	325.70	329.74	322.14	328.13	334.76	334.83
May-2016	344.89	337.62	334.26	312.97	325.89	335.84	325.68	329.28	321.93	328.39	334.54	334.51
Jul-2016	342.89	337.24	334.30	323.70	324.01	332.14	325.05	329.53	321.28	328.14	332.93	331.71
Sep-2016	341.42	337.51	334.45	323.63	324.00	326.52	325.49	329.11	321.42	327.99	332.65	331.17
Oct-2016	341.23	337.74	334.64	323.47	323.76	331.43	325.29	328.92	321.71	327.87	332.39	330.94
Dec-2016	340.58	337.01	334.05	323.78	325.07	330.96	325.92	329.31	321.64	328.20	332.84	330.79
Jan-2017	341.18	338.34	333.94	325.04	326.39	330.71	326.76	330.50	322.81	328.90	334.54	332.63
Feb-2017	339.74	336.17	333.94	324.92	324.89	--	324.27	328.05	321.93	328.25	331.83	330.87
May-2018	340.31	335.56	332.85	321.79	324.54	328.72	325.72	329.32	320.26	326.36	330.38	330.57
Aug-2018	339.16	336.37	333.95	323.02	323.43	326.91	325.84	329.58	321.57	327.67	331.01	329.38
Nov-2018	--	--	--	325.51	326.24	327.20	--	--	--	--	--	--
Feb-2019	341.95	338.15	334.86	325.97	326.50	331.39	326.37	330.03	322.60	328.80	333.60	334.25
Apr-2019	--	--	--	325.37	326.28	335.76	326.20	330.00	--	328.16	333.29	334.59
May-2019	345.68	337.54	335.13	325.65	326.15	339.02	326.09	329.83	322.03	328.08	333.46	334.77
Jul-2019	343.95	336.89	334.94	324.72	324.73	332.17	325.80	329.57	321.43	327.97	332.23	331.85
Feb-2020	341.88	338.56	334.94	--	--	--	326.04	329.58	322.12	328.10	333.38	333.44
May-2020	344.09	337.79	335.10	325.38	326.20	330.42	326.32	329.75	322.17	328.33	333.29	333.97
Oct-2020	340.56	337.35	334.69	323.57	324.19	327.67	325.36	328.60	321.12	327.49	330.97	330.04
Dec-2020	340.04	337.61	334.63	323.51	325.17	327.12	--	--	--	--	--	--
Feb-2021	341.68	338.16	334.72	--	--	--	326.38	329.55	322.20	328.46	333.35	333.73
Jun-2021	345.82	337.15	334.93	326.36	326.87	330.59	326.77	329.92	322.45	328.70	334.69	335.88
Jul-2021	--	--	--	--	325.45	--	--	--	--	--	--	--
Oct-2021	340.54	336.75	334.53	322.86	323.58	327.58	325.23	328.51	320.33	327.08	330.94	329.73
Mar-2022	339.58	337.12	333.92	323.80	325.62	326.17	DRY	DRY	DRY	DRY	DRY	DRY
Jun-2022	338.86	335.94	333.48	323.11	323.46	326.44	324.65	328.45	320.27	327.03	330.56	329.18
Aug-2022	339.01	336.02	333.48	322.80	324.21	325.87	--	--	--	--	--	--
Oct-2022	--	--	--	--	--	--	324.90	328.75	321.19	327.16	330.50	329.17
Nov-2022	338.17	336.41	333.31	323.12	324.46	325.74	--	--	--	--	--	--
Feb-2023	--	--	--	325.80	325.52	327.52	326.20	329.95	322.28	327.97	333.00	332.79
Jun-2023	339.19	336.58	333.87	324.06	324.44	327.57	325.51	328.86	321.42	327.60	330.98	330.04
Jul-2023	--	--	--	--	324.76	--	--	--	--	--	--	--
Oct-2023	338.51	336.62	333.95	322.97	323.27	326.72	325.44	328.98	320.82	327.03	330.46	329.12
Dec-2023	--	--	--	323.85	325.01	326.04	--	--	--	--	--	--
Feb-2024	339.36	337.89	334.35	324.90	325.68	328.14	325.85	329.77	322.36	327.52	332.36	331.59
Apr-2024	340.18	337.75	334.50	325.31	326.16	328.90	326.13	329.93	322.70	327.79	333.30	333.03
Jun-2024	--	--	--	325.28	326.22	328.84	--	--	--	--	--	--
Sep-2024	339.66	337.28	334.42	323.46	323.68	328.11	324.88	328.66	320.87	327.07	330.92	329.71
Nov-2024	--	--	--	323.49	323.87	328.04	--	--	--	--	--	--

Notes:

1. Groundwater elevation measured in feet above mean sea level.

*AD-16 prior to February 2017.

**Table 1: Residence Time Calculation Summary
Welsh Landfill**

CCR Management Unit	Monitoring Well	Well Diameter (inches)	2024-02		2024-04		2024-09	
			Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)
Landfill	AD-1 ^[1]	2.0	3.2	18.9	2.8	21.9	2.7	22.4
	AD-5 ^[1]	2.0	2.0	30.0	2.2	27.2	1.7	35.9
	AD-11 ^[2]	0.0	4.4	13.7	5.4	11.2	3.3	18.6
	AD-13 ^[2]	0.0	4.0	15.3	2.8	21.4	3.2	19.0
	AD-14 ^[2]	2.0	3.5	17.2	4.0	15.3	2.4	25.5
	AD-17 ^[1]	2.0	8.8	6.9	9.0	6.7	7.6	8.0

Notes:

[1] - Upgradient Well

[2] - Downgradient Well

**Table 1. Groundwater Data Summary: AD-1
Welsh - 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
5/26/2016	Background	0.346	36.5	5	< 0.083 U1	5.9	42	252
7/27/2016	Background	0.35	39.6	4	< 0.083 U1	5.3	36	239
9/30/2016	Background	0.332	15	5	< 0.083 U1	5.4	35	173
10/19/2016	Background	0.398	19.1	4	< 0.083 U1	5.2	42	192
12/12/2016	Background	0.394	8.74	4	< 0.083 U1	5.2	40	200
1/17/2017	Background	0.656	129	4	< 0.083 U1	7.1	68	538
2/23/2017	Background	0.7	147	9	< 0.083 U1	6.9	68	612
6/7/2017	Background	0.449	15.1	4	< 0.083 U1	5.1	42	176
10/6/2017	Detection	0.453	14.3	4	< 0.083 U1	5.3	40	160
5/24/2018	Assessment	0.345	10.2	4	< 0.083 U1	5.2	43	150
8/14/2018	Assessment	0.443	5.95	5	< 0.083 U1	5.2	44	160
2/20/2019	Assessment	0.504	142	2.82	0.24	7.3	49.2	522
5/30/2019	Assessment	0.689	138	1.59	0.29	6.7	43.3	588
7/24/2019	Assessment	0.644	62.7	2	0.106 J1	6.0	58	180
2/17/2020	Assessment	0.626	115	3.41	0.31	5.8	56.3	488
5/20/2020	Assessment	0.801	126	1.83	0.20	7.2	51.4	508
10/14/2020	Assessment	0.670	3.88	2.16	0.25	4.5	66.9	183
2/23/2021	Assessment	0.617	113	--	0.31	6.6	--	--
6/2/2021	Assessment	0.786	97.1	2.26	0.30	6.2	61.4	400
10/20/2021	Assessment	0.732	4.8	2.21	0.22	4.4	72.4	190
6/28/2022	Assessment	0.768	6.76	2.32	0.22	4.9	74.7	180
11/1/2022	Assessment	0.586	7.87	2.70	0.14	4.8	61.3	170
6/6/2023	Assessment	0.729	6.59	3.03	0.24	4.9	91.1	210
10/4/2023	Assessment	0.901	6.56	3.03	0.2	5.3	80.7	200
4/1/2024	Assessment	0.781	44.9 M1	3.33	0.23	5.7	104	310
9/10/2024	Assessment	0.973	7.75	3.98	0.43	5.7	126	260

**Table 1. Groundwater Data Summary: AD-1
Welsh - LF
Appendix IV Constituents**

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	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/26/2016	Background	< 0.93 U1	1.39361 J1	191	0.271453 J1	0.213294 J1	0.240267 J1	1.15339 J1	1.184	< 0.083 U1	< 0.68 U1	0.01	0.033	0.53149 J1	1.74922 J1	0.959865 J1
7/27/2016	Background	< 0.93 U1	< 1.05 U1	191	0.315631 J1	0.0940357 J1	< 0.23 U1	0.615933 J1	0.9952	< 0.083 U1	< 0.68 U1	0.019	0.00793 J1	< 0.29 U1	1.81763 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	2.96797 J1	141	0.382874 J1	< 0.07 U1	5	0.850408 J1	1.38	< 0.083 U1	3.38434 J1	0.014	0.01773 J1	< 0.29 U1	1.02629 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	114	0.311247 J1	< 0.07 U1	0.412131 J1	0.649606 J1	1.141	< 0.083 U1	< 0.68 U1	0.008	0.00534 J1	1.39872 J1	2.03168 J1	1.25062 J1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	72	0.34133 J1	< 0.07 U1	< 0.23 U1	0.424105 J1	0.719	< 0.083 U1	< 0.68 U1	0.008	0.01521 J1	< 0.29 U1	1.85825 J1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	410	0.0366913 J1	< 0.07 U1	< 0.23 U1	0.480125 J1	3.009	< 0.083 U1	< 0.68 U1	0.000275956 J1	< 0.005 U1	< 0.29 U1	4.04737 J1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	488	< 0.02 U1	< 0.07 U1	< 0.23 U1	0.765099 J1	4.309	< 0.083 U1	< 0.68 U1	0.001	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/7/2017	Background	< 0.93 U1	1.14 J1	93.46	0.37 J1	< 0.07 U1	0.66 J1	0.77 J1	0.676	< 0.083 U1	< 0.68 U1	0.00902	0.007 J1	< 0.29 U1	2.1 J1	< 0.86 U1
5/24/2018	Assessment	3.17 J1	< 1.05 U1	79.9	0.39 J1	< 0.07 U1	< 0.23 U1	0.35 J1	1.983	< 0.083 U1	< 0.68 U1	0.00814	0.006 J1	< 0.29 U1	1.38 J1	< 0.86 U1
8/14/2018	Assessment	0.03 J1	0.21	63.0	0.482	0.02	0.160	0.797	1.102	< 0.083 U1	0.238	0.00708	0.013 J1	0.21	1.7	0.03 J1
2/20/2019	Assessment	0.16	0.46	457	0.09 J1	0.01 J1	0.306	0.399	3.159	0.24	0.124	0.00155	< 0.005 U1	1 J1	0.7	< 0.1 U1
5/30/2019	Assessment	0.16	0.60	512	0.244	0.01 J1	0.1 J1	0.756	2.717	0.29	0.197	< 0.009 U1	< 0.005 U1	2.43	1.4	< 0.1 U1
7/24/2019	Assessment	0.08 J1	0.39	245	0.540	0.02 J1	0.1 J1	0.789	1.819	0.106 J1	0.1 J1	0.00557	< 0.005 U1	2 J1	3.4	< 0.1 U1
2/17/2020	Assessment	0.33	0.49	303	0.07 J1	0.02 J1	0.1 J1	0.28	2.665	0.31	0.1 J1	0.00105	< 0.002 U1	1 J1	2.3	< 0.1 U1
5/20/2020	Assessment	0.15	0.53	394	0.270	0.02 J1	0.1 J1	0.490	2.312	0.20	0.1 J1	0.00301	< 0.002 U1	2 J1	2.8	< 0.1 U1
10/14/2020	Assessment	< 0.1 U1	0.3 J1	84.7	0.984	< 0.05 U1	0.9 J1	2.12	1.552	0.25	0.3 J1	0.00932	0.003 J1	< 2 U1	5.3	< 0.5 U1
2/23/2021	Assessment	0.24	0.74	338	0.136	0.03 J1	0.338	0.477	1.737	0.31	0.852	0.00155	< 0.002 U1	1 J1	2.5	< 0.1 U1
6/2/2021	Assessment	0.18	0.66	349	0.088	0.01 J1	0.32	0.474	2.15	0.30	0.09 J1	0.00052	0.002 J1	4.8	1.26	< 0.04 U1
10/20/2021	Assessment	0.04 J1	0.20	86.1	0.932	0.026	0.33	2.44	0.99	0.22	0.23	0.00756	0.003 J1	< 0.1 U1	7.39	< 0.04 U1
6/28/2022	Assessment	0.03 J1	0.26	85.4	0.995	0.030	0.37	2.34	3.69	0.22	0.33	0.00855	0.002 J1	< 0.1 U1	8.35	0.05 J1
11/1/2022	Assessment	0.03 J1	0.19	78.9	0.620	0.024	0.35	1.17	2.01	0.14	0.13 J1	0.00818	0.002 J1	< 0.1 U1	5.51	< 0.04 U1
6/6/2023	Assessment	0.041 J1	0.21	83.4	1.11	0.034	0.35	2.67	0.95	0.24	0.37	0.00805	0.002 J1	< 0.1 U1	10.1	0.04 J1
10/4/2023	Assessment	0.029 J1	0.19	80.0	1.06	0.027	0.38	2.25	1.86	0.2	0.44	0.0103	0.002 J1	< 0.1 U1	9.26	0.05 J1
4/1/2024	Assessment	0.073 J1	0.26	190 M1	0.524	0.032	0.28 J1	1.53	2.39	0.23	0.14 J1	0.00378	< 0.002 U1	0.3 J1	7.67	0.03 J1
9/10/2024	Assessment	0.029 J1	0.19	83.9	2.2 J1	0.039	0.44	4.72	4.70	0.43	0.21	0.011 J1	0.002 J1	< 0.1 U1	11.3	0.06 J1

**Table 1. Groundwater Data Summary: AD-5
Welsh - 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
5/31/2016	Background	0.03	36.9	15	0.3469 J1	6.4	123	337
7/28/2016	Background	0.04	44.7	16	< 0.083 U1	5.4	163	360
9/30/2016	Background	0.04	46.3	15	0.2436 J1	5.3	190	416
10/20/2016	Background	0.05	50.7	14	< 0.083 U1	5.9	267	448
12/13/2016	Background	0.05	49.6	13	< 0.083 U1	6.2	233	484
1/17/2017	Background	0.04	49.8	14	< 0.083 U1	6.3	234	438
2/23/2017	Background	0.04	33	15	< 0.083 U1	5.5	127	286
6/7/2017	Background	0.05281	49.7	14	< 0.083 U1	6.0	82	300
10/6/2017	Detection	0.04322	33.1	16	< 0.083 U1	5.6	82	258
5/24/2018	Assessment	0.05007	28.1	22	< 0.083 U1	6.2	60	242
8/15/2018	Assessment	0.050	40.5	19	< 0.083 U1	6.2	240	428
2/21/2019	Assessment	0.033	33.9	24.7	0.21	5.4	46.5	220
5/30/2019	Assessment	0.03 J1	30.0	22.3	0.29	6.3	51.3	238
7/24/2019	Assessment	0.04 J1	41.1	18	0.112 J1	6.3	90	354
2/17/2020	Assessment	0.03 J1	39.8	19.8	0.22	5.5	43.7	248
5/20/2020	Assessment	0.03 J1	40.2	22.3	0.18	6.8	55.5	264
10/14/2020	Assessment	0.04 J1	36.6	18.8	0.18	6.5	148	338
2/23/2021	Assessment	0.03 J1	30.9	--	0.23	6.0	--	--
6/2/2021	Assessment	0.027 J1	24.4	19.6	0.21	5.8	53.8	220
10/20/2021	Assessment	0.038 J1	38.4	17.4	0.17	5.6	155	370
6/28/2022	Assessment	0.048 J1	32.9	15.3	0.15	5.9	146	310
11/1/2022	Assessment	0.041 J1	38.6	16.9	0.16	5.9	185	380
6/6/2023	Assessment	0.030 J1	26.5	16.1	0.15	5.8	114	280
10/4/2023	Assessment	0.042 J1	35.2	17.5	0.17	6.6	132	290
4/2/2024	Assessment	0.039 J1	26.0	32.9	0.18	5.7	41.4	210
9/10/2024	Assessment	0.039 J1	33.2	22.5	0.16	6.3	114	310

Table 1. Groundwater Data Summary: AD-5

Welsh - LF

Appendix IV Constituents

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	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/31/2016	Background	< 0.93 U1	< 1.05 U1	57	0.149801 J1	0.0765156 J1	0.555038 J1	14	1.634	0.3469 J1	< 0.68 U1	0.135	0.01135 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
7/28/2016	Background	2.05116 J1	2.90819 J1	93	0.518653 J1	0.502155 J1	0.411466 J1	15	4.75	< 0.083 U1	< 0.68 U1	0.191	0.01516 J1	< 0.29 U1	1.08901 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	4.7609 J1	87	0.251584 J1	< 0.07 U1	0.90676 J1	14	3.33	0.2436 J1	< 0.68 U1	0.186	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/20/2016	Background	< 0.93 U1	< 1.05 U1	70	0.08781 J1	0.107488 J1	0.248085 J1	9	2.319	< 0.083 U1	< 0.68 U1	0.225	< 0.005 U1	1.36984 J1	< 0.99 U1	< 0.86 U1
12/13/2016	Background	< 0.93 U1	1.15381 J1	53	0.164529 J1	0.203546 J1	0.747921 J1	13	2.182	< 0.083 U1	< 0.68 U1	0.199	0.00802 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	47	0.0574718 J1	0.180502 J1	< 0.23 U1	12	1.023	< 0.083 U1	< 0.68 U1	0.239	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	42	0.0306858 J1	< 0.07 U1	< 0.23 U1	13	1.788	< 0.083 U1	< 0.68 U1	0.166	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/7/2017	Background	< 0.93 U1	3.85 J1	87.7	0.08 J1	0.39 J1	0.28 J1	11.93	2.32	< 0.083 U1	< 0.68 U1	0.124	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/24/2018	Assessment	< 0.93 U1	< 1.05 U1	71.16	< 0.02 U1	0.23 J1	0.8 J1	14.24	1.946	< 0.083 U1	< 0.68 U1	0.121	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/15/2018	Assessment	0.01 J1	1.69	63.7	0.055	0.008 J1	0.072	11.4	0.316	< 0.083 U1	0.079	0.147	< 0.005 U1	0.13	0.08 J1	< 0.01 U1
2/21/2019	Assessment	0.02 J1	1.59	69.4	0.08 J1	< 0.01 U1	0.432	8.58	1.267	0.21	0.147	0.0807	< 0.005 U1	< 0.4 U1	0.1 J1	< 0.1 U1
5/30/2019	Assessment	< 0.02 U1	3.05	60.5	0.08 J1	< 0.01 U1	0.06 J1	11.8	1.431	0.29	0.05 J1	0.104	0.006 J1	< 0.4 U1	0.05 J1	< 0.1 U1
7/24/2019	Assessment	< 0.02 U1	2.48	77.4	0.05 J1	< 0.01 U1	0.05 J1	8.38	2.533	0.112 J1	< 0.05 U1	0.108	< 0.005 U1	< 0.4 U1	0.06 J1	< 0.1 U1
2/17/2020	Assessment	0.03 J1	2.17	109	0.09 J1	0.02 J1	0.336	4.52	2.393	0.22	0.227	0.0732	< 0.002 U1	0.9 J1	0.2	< 0.1 U1
5/20/2020	Assessment	< 0.02 U1	1.78	93.1	0.05 J1	0.01 J1	0.1 J1	7.65	1.612	0.18	0.07 J1	0.0740	< 0.002 U1	< 0.4 U1	0.09 J1	< 0.1 U1
10/14/2020	Assessment	< 0.02 U1	6.28	71.7	0.09 J1	< 0.01 U1	0.09 J1	14.9	2.70	0.18	0.05 J1	0.134	< 0.002 U1	< 0.4 U1	0.1 J1	< 0.1 U1
2/23/2021	Assessment	< 0.02 U1	2.06	68.3	0.03 J1	< 0.01 U1	0.1 J1	6.31	1.397	0.23	< 0.05 U1	0.0705	< 0.002 U1	< 0.4 U1	0.03 J1	< 0.1 U1
6/2/2021	Assessment	< 0.02 U1	1.72	49.3	0.018 M1, J1	< 0.004 U1	0.26	10.5	2.47	0.21	< 0.05 U1	0.0764 M1	< 0.002 U1	0.1 J1	< 0.09 U1	< 0.04 U1
10/20/2021	Assessment	< 0.02 U1	1.44	53.2	0.018 J1	< 0.004 U1	0.23	6.85	2.68	0.17	< 0.05 U1	0.133 M1	< 0.002 U1	< 0.1 U1	< 0.09 U1	< 0.04 U1
6/28/2022	Assessment	< 0.02 U1	3.01	51.8	0.032 J1	< 0.004 U1	0.22	12.8	2.06	0.15	< 0.05 U1	0.161	< 0.002 U1	0.1 J1	< 0.09 U1	0.05 J1
11/1/2022	Assessment	< 0.02 U1	2.77	63.2	0.046 J1	< 0.004 U1	0.43	15.1	3.88	0.16	< 0.05 U1	0.174	< 0.002 U1	< 0.1 U1	< 0.09 U1	< 0.04 U1
6/6/2023	Assessment	0.010 J1	4.30	45.5	0.055	< 0.004 U1	0.24 J1	9.47	1.72	0.15	< 0.05 U1	0.106	< 0.002 U1	< 0.1 U1	0.06 J1	< 0.02 U1
10/4/2023	Assessment	< 0.008 U1	2.94	63.9	0.049 J1	< 0.004 U1	0.30	12.8	3.57	0.17	< 0.05 U1	0.143	< 0.002 U1	< 0.1 U1	0.05 J1	< 0.02 U1
4/2/2024	Assessment	0.015 J1	2.94	78.4	0.063	0.007 J1	0.26 J1	11.5	2.34	0.18	0.06 J1	0.0753	< 0.002 U1	0.1 J1	0.08 J1	0.03 J1
9/10/2024	Assessment	< 0.008 U1	1.26	62.3	< 0.4 U1	0.010 J1	0.31	10.1	2.10	0.16	0.07 J1	0.152	< 0.002 U1	< 0.1 U1	0.06 J1	< 0.02 U1

Table 1. Groundwater Data Summary: AD-11

Welsh - 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
5/31/2016	Background	2.47	8.47	9	2	5.2	518	388
7/28/2016	Background	2.83	8.88	10	2	3.8	596	1,000
9/29/2016	Background	3.4	10.7	12	2	4.1	683	1,065
10/19/2016	Background	3.77	8.78	11	3	3.7	706	1,024
12/12/2016	Background	3.36	8.98	10	2	3.8	548	1,044
1/17/2017	Background	2.81	10.3	11	2	4.4	760	1,048
2/22/2017	Background	2.88	9.31	10	2	4.3	558	876
6/6/2017	Background	2.79	9.93	10	1.366	3.9	556	960
10/5/2017	Detection	2.58	6.99	10	< 0.083 U1	4.4	527	752
1/18/2018	Detection	1.9	--	--	--	4.5	377	564
5/23/2018	Assessment	--	--	--	< 0.083 U1	4.1	--	--
8/15/2018	Assessment	--	--	--	< 0.083 U1	4.7	--	--
9/17/2018	Assessment	1.84	6.61	15	--	--	410	720
2/5/2019	Assessment	1.47	4.56	9.47	0.47	4.3	225	--
2/21/2019	Assessment	1.63	19.1	9.23	0.41	4.9	306	542
4/30/2019	Assessment	1.34	7.53	--	--	5.3	--	--
5/29/2019	Assessment	1.40	5.78	6.96	0.47	4.2	367	680
7/23/2019	Assessment	1.56	7.19	6	0.338 J1	4.5	342	700
2/17/2020	Assessment	1.47	20.5	8.19	0.42	4.9	350	622
5/19/2020	Assessment	1.54	24.3	6.83	0.51	6.3	419	720
7/22/2020	Assessment	1.81	9.45	--	--	4.0	--	--
10/12/2020	Assessment	1.69	8.57	8.16	0.63	3.9	604	764
2/23/2021	Assessment	1.15	23.3	--	0.52	6.3	--	--
6/1/2021	Assessment	1.64	22.0	6.52	0.62	5.7	485	790
10/19/2021	Assessment	1.95	8.1	9.73	0.66	3.6	488	800
3/1/2022	Assessment	1.67	10.2	11.5	1.19	3.6	594	900
6/27/2022	Assessment	1.44	10.5	11.0	0.74	3.8	502	800
10/31/2022	Assessment	1.24	4.63	10.6	0.29	3.9	269	450
2/6/2023	Assessment	1.21	15.8	9.63	0.69	5.0	368	620
6/5/2023	Assessment	0.969	7.50	10.8	0.51	4.0	413	670
10/3/2023	Assessment	1.41	10.5	10.6	0.69	4.1	490	750
2/26/2024	Assessment	1.18	10.8	10.2	0.95	4.0	495	740
4/2/2024	Assessment	1.07	11.6	9.75	0.66	4.0	437	670
9/9/2024	Assessment	1.19	11.7	10.2	0.60	3.5	486	770

Table 1. Groundwater Data Summary: AD-11

Welsh - LF

Appendix IV Constituents

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	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/31/2016	Background	< 0.93 U1	< 1.05 U1	14	4	0.325877 J1	3	26	1.773	2	< 0.68 U1	0.032	0.02258 J1	< 0.29 U1	1.54658 J1	< 0.86 U1
7/28/2016	Background	< 0.93 U1	< 1.05 U1	12	4	0.453906 J1	0.581828 J1	26	2.23	2	< 0.68 U1	0.047	0.00624 J1	< 0.29 U1	1.63477 J1	1.31673 J1
9/29/2016	Background	< 0.93 U1	1.77308 J1	52	5	0.579196 J1	7	30	3.92	2	4.25302 J1	0.047	0.01924 J1	< 0.29 U1	2.09096 J1	1.07034 J1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	20	5	0.515668 J1	2	27	2.56	3	< 0.68 U1	0.047	0.0156 J1	1.51918 J1	< 0.99 U1	< 0.86 U1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	13	4	0.366319 J1	0.365212 J1	25	1.569	2	< 0.68 U1	0.041	0.01212 J1	< 0.29 U1	1.57203 J1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	13	4	0.394925 J1	0.749253 J1	25	1.082	2	< 0.68 U1	0.046	< 0.005 U1	< 0.29 U1	< 0.99 U1	1.23139 J1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	19	4	0.430668 J1	2	24	1.45	2	1.18289 J1	0.035	0.01613 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	1.23 J1	10.12	2.79	0.41 J1	0.32 J1	22.16	1.902	1.366	< 0.68 U1	0.03654	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	2.6 J1	16.27	0.89 J1	0.18 J1	0.8 J1	8.63	1.912	< 0.083 U1	< 0.68 U1	0.01875	0.007 J1	< 0.29 U1	1.34 J1	46
8/15/2018	Assessment	0.02 J1	1.05	11.9	1.18	0.37	0.257	15.3	2.568	< 0.083 U1	1.42	0.0175	< 0.005 U1	0.05 J1	2.4	0.200
2/21/2019	Assessment	0.03 J1	0.51	40.3	0.824	0.19	0.259	8.58	1.506	0.41	0.523	0.0157	< 0.005 U1	< 0.4 U1	1.5	0.1 J1
5/29/2019	Assessment	< 0.02 U1	0.78	19.1	1.05	0.20	0.369	9.82	1.473	0.47	0.847	0.02 J1	< 0.005 U1	< 0.4 U1	2.2	0.1 J1
7/23/2019	Assessment	< 0.02 U1	0.59	16.4	0.987	0.24	0.413	10.5	2.246	0.338 J1	0.976	0.0153	< 0.005 U1	< 0.4 U1	1.0	0.2 J1
2/17/2020	Assessment	0.03 J1	0.39	57.9	0.431	0.21	0.334	8.41	2.106	0.42	0.493	0.0142	0.007	2 J1	0.8	0.1 J1
5/19/2020	Assessment	0.04 J1	0.55	35.7	0.782	0.26	0.254	11.4	2.352	0.51	0.427	0.0138	0.006	< 0.4 U1	1.4	0.1 J1
10/12/2020	Assessment	0.02 J1	0.64	14.1	1.52	0.31	0.306	14.0	2.651	0.63	1.25	0.0246	0.006	< 0.4 U1	1.8	0.2 J1
2/23/2021	Assessment	0.04 J1	0.47	38.2	0.515	0.18	0.276	8.63	1.298	0.52	0.435	0.0102	0.011	< 0.4 U1	1.0	0.1 J1
6/1/2021	Assessment	0.03 J1	0.50	36.3	0.896	0.325	0.39	13.8	5.93	0.62	0.69	0.0145	0.007	0.2 J1	1.31	0.14 J1
10/19/2021	Assessment	0.02 J1	0.64	12.3	1.31	0.320	0.62	15.2	2.15	0.66	1.37	0.0211	0.007	< 0.1 U1	2.12	0.18 J1
3/1/2022	Assessment	< 0.02 U1	0.84	10.5	2.56	0.426	0.66	21.3	4.90	1.19	1.48	0.0254	0.010 Q1	< 0.1 U1	1.89	0.20
6/27/2022	Assessment	< 0.02 U1	0.71	9.25	1.39 M1	0.366	0.71	17.6	1.74	0.74	1.18	0.0230	0.006	< 0.1 U1	1.93	0.18 J1
10/31/2022	Assessment	< 0.02 U1	0.30	15.9	0.83	0.164	0.45	7.58	2.37	0.29	0.68	0.0244	0.004 J1	< 0.1 U1	0.55	0.13 J1
2/6/2023	Assessment	0.02 J1	0.56	28.6	1.25	0.282	0.38	12.9	4.05	0.69	0.88	0.0213	0.007	0.1 J1	1.36	0.16 J1
6/5/2023	Assessment	0.020 J1	0.66	11.2	1.02	0.244	0.57	12.1	3.69	0.51	0.94	0.0185	0.012	< 0.1 U1	1.58	0.14 J1
10/3/2023	Assessment	0.015 J1	0.85	12.8	1.44 M1	0.385	0.57	16.9	2.90	0.69	1.48	0.0283 M1	0.006	< 0.1 U1	2.36	0.20
2/26/2024	Assessment	0.016 J1	0.86	14.7	2.37	0.402	0.41	18.1	2.32	0.95	1.35	0.0310	0.008	< 0.1 U1	2.45	0.17 J1
4/2/2024	Assessment	0.021 J1	0.74	16.9	1.33	0.363	0.58	17.0	1.86	0.66	1.02	0.0196	0.008	< 0.1 U1	2.22	0.16 J1
9/9/2024	Assessment	0.013 J1	1.02	12.7	2.1 J1	0.385	0.43	18.0	6.37	0.60	1.51	0.034	0.006	< 0.1 U1	2.51	0.20

Table 1. Groundwater Data Summary: AD-13

Welsh - 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
5/31/2016	Background	1.19	8.02	12	0.4948 J1	6.1	177	900
7/27/2016	Background	1.23	3.7	15	0.7416 J1	4.5	187	404
9/29/2016	Background	1.37	2.7	17	0.6464 J1	4.6	207	431
10/19/2016	Background	1.67	3.66	19	1.1263	4.3	226	482
12/13/2016	Background	1.96	3.77	18	0.4149 J1	4.8	287	596
1/19/2017	Background	0.402	33.5	7	< 0.083 U1	5.4	90	222
2/23/2017	Background	1.27	10.3	13	< 0.083 U1	5.1	183	392
6/6/2017	Background	1.68	3.03	15	0.6679 J1	4.2	244	494
10/6/2017	Detection	2.23	5.11	13	< 0.083 U1	4.6	345	564
1/18/2018	Detection	2.13	--	--	--	4.7	383	588
5/23/2018	Assessment	--	--	--	0.6534 J1	4.5	--	--
8/14/2018	Assessment	--	--	--	0.7442 J1	4.8	--	--
9/17/2018	Assessment	1.49	10.1	18	--	--	316	620
2/5/2019	Assessment	0.656	5.85	5.43	0.39	4.5	130	--
2/20/2019	Assessment	0.484	17.7	3.95	0.28	4.9	96.3	234
4/30/2019	Assessment	0.483	--	--	--	4.9	--	--
5/30/2019	Assessment	0.477	9.88	3.60	0.53	5.2	94.0	196
7/23/2019	Assessment	0.780	6.16	5	0.169 J1	4.8	146	334
2/17/2020	Assessment	0.929	17.6	7.79	0.69	4.9	236	442
5/19/2020	Assessment	0.936	19.2	8.38	0.44	5.5	193	390
7/22/2020	Assessment	1.44	--	--	--	4.8	--	--
10/12/2020	Assessment	1.52	8.03	18.1	0.33	4.5	278	522
2/23/2021	Assessment	0.581	46.4	--	0.27	5.9	--	--
6/1/2021	Assessment	0.831	41.3	3.70	0.43	6.1	94.6	280
10/19/2021	Assessment	1.36	5.5	10.9	0.19	4.3	201	400
3/1/2022	Assessment	1.36	4.98	11.0	0.17	4.1	221	390
6/27/2022	Assessment	1.33	6.57	10.3	0.18	4.5	226	420
10/31/2022	Assessment	1.02	9.01	11.9	0.18	4.9	207	410
2/6/2023	Assessment	1.02	16.5 M1	4.85	0.39	5.5	138	280
6/5/2023	Assessment	1.22	4.24	8.39	0.11	4.6	184	350
10/3/2023	Assessment	0.961	6.73	10.9	0.15	5.3	181	360
2/26/2024	Assessment	1.13	4.90	6.69	0.55	5.3	154	290
4/2/2024	Assessment	1.23	11.0	4.4	0.74	5.3	151	270
9/8/2024	Assessment	--	--	--	--	5.3	--	--
9/9/2024	Assessment	0.853	6.66	8.44	0.13	--	154	310

Table 1. Groundwater Data Summary: AD-13

Welsh - LF

Appendix IV Constituents

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	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/31/2016	Background	< 0.93 U1	< 1.05 U1	62	0.682114 J1	< 0.07 U1	0.690428 J1	4.11633 J1	1.223	0.4948 J1	< 0.68 U1	0.011	0.01797 J1	< 0.29 U1	1.4772 J1	< 0.86 U1
7/27/2016	Background	< 0.93 U1	< 1.05 U1	36	0.922975 J1	0.0850015 J1	< 0.23 U1	4.46011 J1	1.601	0.7416 J1	< 0.68 U1	0.026	0.00515 J1	< 0.29 U1	2.00998 J1	< 0.86 U1
9/29/2016	Background	< 0.93 U1	< 1.05 U1	40	0.827513 J1	0.0965393 J1	0.77177 J1	4.59287 J1	2.213	0.6464 J1	< 0.68 U1	0.02	< 0.005 U1	< 0.29 U1	1.03137 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	30	0.934335 J1	0.0913657 J1	0.581648 J1	4.91926 J1	3.662	1.1263	< 0.68 U1	0.022	< 0.005 U1	0.870491 J1	1.03637 J1	0.97358 J1
12/13/2016	Background	< 0.93 U1	3.69546 J1	51	1	0.185393 J1	7	7	2.27	0.4149 J1	1.09698 J1	0.025	0.01565 J1	0.353324 J1	1.64297 J1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	6	112	0.198035 J1	< 0.07 U1	4	1.76949 J1	2.228	< 0.083 U1	2.72659 J1	0.004	0.00673 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	41	0.612394 J1	< 0.07 U1	< 0.23 U1	4.55541 J1	1.556	< 0.083 U1	< 0.68 U1	0.015	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	1.53 J1	< 1.05 U1	17.12	0.89 J1	0.14 J1	< 0.23 U1	6.24	1.565	0.6679 J1	< 0.68 U1	0.02082	< 0.005 U1	< 0.29 U1	1.03 J1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	< 1.05 U1	26.53	0.87 J1	< 0.07 U1	0.73 J1	9.37	2.16	0.6534 J1	< 0.68 U1	0.0291	0.008 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/14/2018	Assessment	0.03 J1	1.37	16.9	0.971	0.31	0.503	13.1	4.073	0.7442 J1	1.00	0.0321	< 0.005 U1	0.06 J1	1.7	0.277
2/20/2019	Assessment	0.02 J1	0.38	55.2	0.302	0.05	0.2 J1	2.35	2.534	0.28	0.05 J1	0.0094	< 0.005 U1	< 0.4 U1	0.4	< 0.1 U1
5/30/2019	Assessment	0.03 J1	0.32	60.9	0.385	0.07	0.310	3.15	3.15	0.53	0.05 J1	0.009 J1	< 0.005 U1	< 0.4 U1	0.4	< 0.1 U1
7/23/2019	Assessment	0.02 J1	0.37	23.6	0.443	0.09	0.283	3.82	1.748	0.169 J1	0.204	0.0175	< 0.005 U1	< 0.4 U1	0.3	0.1 J1
2/17/2020	Assessment	0.03 J1	0.59	59.4	0.528	0.12	0.354	3.84	3.79	0.69	0.1 J1	0.0132	0.012	0.5 J1	1.1	< 0.1 U1
5/19/2020	Assessment	0.05 J1	0.53	50.3	0.533	0.09	0.261	3.87	1.977	0.44	0.06 J1	0.0147	0.034	1 J1	1.3	< 0.1 U1
10/12/2020	Assessment	< 0.02 U1	0.55	18.5	0.834	0.17	0.410	8.50	1.546	0.33	0.324	0.0480	< 0.002 U1	< 0.4 U1	0.5	0.2 J1
2/23/2021	Assessment	0.06 J1	0.67	115	0.04 J1	0.03 J1	0.243	0.717	2.264	0.27	0.1 J1	0.00302	0.002 J1	2.34	0.5	< 0.1 U1
6/1/2021	Assessment	0.09 J1	0.73	116	0.103	0.032	0.41	0.971	2.27	0.43	0.06 J1	0.00211	0.003 J1	2.6	1.04	< 0.04 U1
10/19/2021	Assessment	< 0.02 U1	0.34	14.6	0.505	0.146	0.34	6.75	1.22	0.19	0.36	0.0330	0.002 J1	< 0.1 U1	0.37 J1	0.19 J1
3/1/2022	Assessment	< 0.02 U1	0.22	12.9	0.67	0.148	0.32	6.57	3.87	0.17	0.30	0.0305	0.003 Q1, J1	< 0.1 U1	0.32 J1	0.16 J1
6/27/2022	Assessment	< 0.02 U1	0.52	15.0	0.641	0.177	0.52	8.44	1.39	0.18	0.54	0.0378	0.002 J1	0.2 J1	0.60	0.22
10/31/2022	Assessment	< 0.02 U1	0.91	24.8	0.66	0.169	0.64	7.70	3.52	0.18	0.51	0.0667	< 0.002 U1	0.2 J1	0.39 J1	0.17 J1
2/6/2023	Assessment	0.03 J1	0.37	70.8	0.182	0.079	0.41	2.87	3.55	0.39	0.08 J1	0.0147	0.002 J1	0.2 J1	0.39 J1	0.07 J1
6/5/2023	Assessment	0.016 J1	0.37	11.9	0.403	0.115	0.48	5.09	1.64	0.11	0.35	0.0232	0.004 J1	< 0.1 U1	0.49 J1	0.14 J1
10/3/2023	Assessment	0.016 J1	0.86	19.7	0.566	0.150	0.57	6.56	2.42	0.15	0.56	0.0477	< 0.002 U1	0.2 J1	0.42 J1	0.16 J1
2/26/2024	Assessment	0.020 J1	0.29	36.5	0.680	0.122	0.34	4.91	2.44	0.55	0.10 J1	0.0158	0.006	< 0.1 U1	0.54	0.08 J1
4/2/2024	Assessment	0.028 J1	0.42	62.2	0.503	0.086	0.33	3.26	1.73	0.74	0.13 J1	0.00972	0.005	0.1 J1	0.53	0.05 J1
9/9/2024	Assessment	0.014 J1	1.24	21.3	0.6 J1	0.103	0.50	5.28	3.55	0.13	0.50	0.054	< 0.002 U1	0.2 J1	0.45 J1	0.14 J1

Table 1. Groundwater Data Summary: AD-14

Welsh - 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
5/31/2016	Background	1.28	2.88	4	< 0.083 U1	4.8	115	285
7/28/2016	Background	1.14	2.51	5	< 0.083 U1	4.2	111	267
9/22/2016	Background	1.14	1.19	5	< 0.083 U1	4.2	111	252
10/19/2016	Background	1.25	2.48	4	< 0.083 U1	3.9	118	276
12/12/2016	Background	1.25	2.41	5	< 0.083 U1	4.1	101	296
1/17/2017	Background	0.915	10.3	4	< 0.083 U1	6.1	92	254
2/22/2017	Background	1.06	9.48	4	< 0.083 U1	5.4	90	212
6/6/2017	Background	1.26	7.69	6	< 0.083 U1	4.8	108	256
10/6/2017	Detection	1.63	3.55	10	< 0.083 U1	4.6	143	288
1/18/2018	Detection	1.57	--	6.43	--	5.7	--	--
5/23/2018	Assessment	--	--	--	< 0.083 U1	4.2	--	--
8/14/2018	Assessment	--	--	--	< 0.083 U1	4.3	--	--
9/17/2018	Assessment	1.51	4.51	12	--	--	204	384
2/5/2019	Assessment	1.10	4.13	3.13	0.15	4.3	99.9	--
2/20/2019	Assessment	1.2	10.3	2.2	0.14	4.3	90.4	236
4/30/2019	Assessment	1.04	--	--	--	4.4	--	--
5/29/2019	Assessment	1.21	9.80	3.65	0.19	4.5	122	274
7/23/2019	Assessment	1.25	9.93	8	0.162 J1	5.5	171	440
2/17/2020	Assessment	1.12	38.7	2.00	0.24	5.2	85.6	294
5/19/2020	Assessment	1.22	15.1	1.46	0.15	5.4	88.5	263
7/22/2020	Assessment	1.24	17.3	--	--	5.2	--	--
10/12/2020	Assessment	1.14	9.63	8.59	0.24	4.3	246	469
2/23/2021	Assessment	1.09	13.1	--	0.20	5.3	--	--
6/1/2021	Assessment	1.33	29.5	1.10	0.20	5.9	91.8	280
10/19/2021	Assessment	1.05	8.2	8.22	0.23	4.0	223	430
3/1/2022	Assessment	1.08	8.58	9.34	0.28	4.3	241	440
6/27/2022	Assessment	1.27	10.4	9.93	0.31	4.0	269	600 P1
10/31/2022	Assessment	1.32	17.6	3.72	0.20	5.7	133	280
2/6/2023	Assessment	1.06	9.63	1.77	0.15	4.8	89.6	230
6/5/2023	Assessment	1.26	10.8	11.5	0.50	5.3	367	610
10/3/2023	Assessment	1.57	12.9	11.4	0.46	4.6	404	670
2/26/2024	Assessment	1.14	13.2	5.36	0.21	4.6	192	360
4/2/2024	Assessment	0.923	2.91	2.01	0.14	3.8	92.7	200
9/9/2024	Assessment	1.44	13.8	8.87	0.32	4.2	337	580

Table 1. Groundwater Data Summary: AD-14

Welsh - LF

Appendix IV Constituents

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	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/31/2016	Background	< 0.93 U1	1.89384 J1	31	0.65845 J1	0.99504 J1	0.536293 J1	10	0.871	< 0.083 U1	< 0.68 U1	0.012	0.03	< 0.29 U1	2.91711 J1	< 0.86 U1
7/28/2016	Background	< 0.93 U1	< 1.05 U1	84	0.653837 J1	0.976466 J1	1	9	1.487	< 0.083 U1	< 0.68 U1	0.024	0.02159 J1	< 0.29 U1	1.93417 J1	< 0.86 U1
9/22/2016	Background	< 0.93 U1	1.45308 J1	30	0.473938 J1	0.975306 J1	0.775009 J1	9	4.817	< 0.083 U1	< 0.68 U1	0.015	0.02217 J1	< 0.29 U1	2.73939 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	39	0.543258 J1	1	0.640984 J1	9	1.972	< 0.083 U1	< 0.68 U1	0.014	0.02024 J1	0.49697 J1	2.46916 J1	< 0.86 U1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	47	0.536415 J1	1	1	9	1.271	< 0.083 U1	< 0.68 U1	0.013	0.037	< 0.29 U1	3.32013 J1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	38	0.215525 J1	0.226476 J1	0.700394 J1	2.91252 J1	1.825	< 0.083 U1	< 0.68 U1	0.013	0.01863 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	42	0.286071 J1	0.187588 J1	< 0.23 U1	3.50056 J1	0.512	< 0.083 U1	< 0.68 U1	0.012	0.01443 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	44.83	0.38 J1	0.67 J1	1.27	6.78	1.138	< 0.083 U1	< 0.68 U1	0.0127	0.021 J1	< 0.29 U1	2.61 J1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	< 1.05 U1	28.17	0.78 J1	1.61	< 0.23 U1	14.34	1.601	< 0.083 U1	< 0.68 U1	0.0152	0.145	< 0.29 U1	3.62 J1	< 0.86 U1
8/14/2018	Assessment	0.01 J1	0.39	24.0	0.854	1.99	0.276	17.6	1.502	< 0.083 U1	0.174	0.0110	0.181	0.03 J1	3.7	0.242
2/20/2019	Assessment	0.03 J1	0.34	41.2	0.387	0.35	0.247	4.37	1.172	0.14	0.09 J1	0.0114	< 0.005 U1	< 0.4 U1	0.8	< 0.1 U1
5/29/2019	Assessment	0.03 J1	0.40	44.8	0.556	0.81	0.2 J1	7.82	1.946	0.19	0.137	0.02 J1	0.181	< 0.4 U1	2.0	< 0.1 U1
7/23/2019	Assessment	< 0.02 U1	0.43	36.2	0.934	2.49	0.286	18.5	2.731	0.162 J1	0.200	0.0155	0.123	< 0.4 U1	2.7	0.2 J1
2/17/2020	Assessment	0.07 J1	0.43	44.4	0.179	0.2	0.2 J1	2.32	2.552	0.24	0.07 J1	0.0063	0.003 J1	2 J1	2.5	0.1 J1
5/19/2020	Assessment	0.03 J1	0.32	35.3	0.396	0.32	0.307	3.81	0.778	0.15	0.1 J1	0.00875	0.002 J1	1 J1	1.5	< 0.1 U1
10/12/2020	Assessment	< 0.02 U1	0.44	22.9	1.46	3.21	0.357	26.0	4.259	0.24	0.307	0.0195	0.391	< 0.4 U1	2.0	0.3 J1
2/23/2021	Assessment	0.03 J1	0.31	36.5	0.4 J1	0.36	0.2 J1	4.18	1.032	0.20	0.1 J1	0.00900	< 0.02 U1	< 0.4 U1	1.3	< 0.1 U1
6/1/2021	Assessment	0.06 J1	0.35	48.6	0.253	0.318	0.41	3.60	1.61	0.20	0.11 J1	0.00676	< 0.002 U1	0.6	2.61	0.05 J1
10/19/2021	Assessment	< 0.02 U1	0.41	23.8	1.24	2.72	0.58	23.4	2.42	0.23	0.35	0.0151	0.308	< 0.1 U1	2.34	0.28
3/1/2022	Assessment	< 0.02 U1	0.42	21.9	1.60	3.34	0.57	26.7	6.06	0.28	0.35	0.0180	0.500 Q1	< 0.1 U1	2.22	0.30
6/27/2022	Assessment	< 0.02 U1	0.54	21.3	1.35	3.74	0.69	29.9	1.73	0.31	0.34	0.0174	0.500	< 0.1 U1	1.21	0.32
10/31/2022	Assessment	0.05 J1	0.35	31.1	0.37	1.06	0.61	7.93	3.35	0.20	0.13 J1	0.0107	0.500	0.4 J1	3.24	0.12 J1
2/6/2023	Assessment	0.03 J1	0.25	35.8	0.460	0.359	0.31	4.17	3.07	0.15	0.16 J1	0.00940	< 0.002 U1	0.2 J1	3.24	0.06 J1
6/5/2023	Assessment	0.020 J1	1.13	20.9	2.56	4.73	0.83	38.7	2.34	0.50	0.60	0.0211	0.524	< 0.1 U1	2.44	0.33
10/3/2023	Assessment	0.014 J1	0.81	16.7	2.34	5.99	0.69	44.8	3.28	0.46	0.62	0.0213	0.530	< 0.1 U1	3.28	0.42
2/26/2024	Assessment	0.028 J1	0.43	57.8	0.571	1.03	0.51	9.91	1.75	0.21	0.32	0.0116	0.332	< 0.1 U1	3.79	0.06 J1
4/2/2024	Assessment	0.023 J1	0.22	33.1	0.531	0.423	0.41	5.25	0.53	0.14	0.21	0.00849	< 0.008 U1	< 0.1 U1	3.23	0.03 J1
9/9/2024	Assessment	0.013 J1	0.80	21.2	2.7	5.40	0.66	40.9	8.51	0.32	0.68	0.028	--	< 0.1 U1	3.46	0.39
9/19/2024	Assessment	--	--	--	--	--	--	--	--	--	--	--	0.500	--	--	--

Table 1. Groundwater Data Summary: AD-17

Geosyntec Consultants, Inc.

Welsh - 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
5/26/2016	Background	0.121	200	43	0.4023 J1	7.2	1,166	1,810
7/27/2016	Background	0.119	195	32	0.4135 J1	5.7	1,005	1,576
9/30/2016	Background	0.111	191	36	0.3055 J1	6.2	1,055	1,663
10/20/2016	Background	0.124	194	32	0.583 J1	6.1	1,163	1,612
12/13/2016	Background	0.135	196	31	0.5399 J1	6.0	1,096	1,560
1/17/2017	Background	0.101	196	33	< 0.083 U1	5.9	1,445	1,686
2/22/2017	Background	0.135	189	30	< 0.083 U1	5.7	1,055	1,628
6/6/2017	Background	0.121	188	30	< 0.083 U1	5.8	1,105	1,578
10/6/2017	Detection	0.183	183	31	< 0.083 U1	5.9	1,090	1,548
5/24/2018	Assessment	0.239	193	39	< 0.083 U1	6.3	1,067	1,836
8/15/2018	Assessment	0.118	187	40	< 0.083 U1	5.6	1,168	1,748
2/21/2019	Assessment	0.151	207	43.2	0.18	6.9	1,060	1,722
5/30/2019	Assessment	0.158	202	41.7	< 0.04 U1	6.1	1,120	1,546
7/24/2019	Assessment	0.113	216	37	0.085 J1	6.0	1,127	1,864
2/17/2020	Assessment	0.104	184	36.0	0.16	5.9	1,070	1,750
5/20/2020	Assessment	0.115	250	47.7	0.15	5.7	1,190	1,890
10/14/2020	Assessment	0.100	185	35.7	0.17	5.4	1,060	1,720
2/23/2021	Assessment	0.098	168	--	0.17	5.6	--	--
6/2/2021	Assessment	0.124	233	44.9	0.31	5.7	1,210	1,890
10/20/2021	Assessment	0.104	164	37.3	0.16	5.1	1,040	1,710
6/28/2022	Assessment	0.112	167	37.0	0.09 J1	5.2	1,050	1,740
11/1/2022	Assessment	0.097	165	40.3	0.09 J1	5.7	1,110	1,690
6/6/2023	Assessment	0.10 J1	150	35.6	< 0.05 U1	5.3	1,190	1,510
10/4/2023	Assessment	0.14 J1	176 M1	37.9	0.06 J1	5.8	1,180	1,520
4/1/2024	Assessment	0.096	131	31.8	0.13 J1	5.4	950	1,280
9/10/2024	Assessment	0.106	172	38.4	< 0.05 U1	5.4	1,110	1,580 S7

Table 1. Groundwater Data Summary: AD-17

Welsh - LF

Appendix IV Constituents

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	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
5/26/2016	Background	< 0.93 U1	1.37501 J1	21	0.173275 J1	2	1	63	1.525	0.4023 J1	< 0.68 U1	0.37	0.032	< 0.29 U1	< 0.99 U1	< 0.86 U1
7/27/2016	Background	1.13716 J1	< 1.05 U1	20	0.307264 J1	4	1	68	2.78	0.4135 J1	< 0.68 U1	0.374	0.02133 J1	1.04115 J1	4.56733 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	< 1.05 U1	31	0.175474 J1	0.848199 J1	3	58	2.358	0.3055 J1	< 0.68 U1	0.354	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/20/2016	Background	< 0.93 U1	< 1.05 U1	34	0.200656 J1	2	4	65	2.224	0.583 J1	< 0.68 U1	0.394	< 0.005 U1	0.322249 J1	3.34422 J1	< 0.86 U1
12/13/2016	Background	< 0.93 U1	< 1.05 U1	17	0.0498325 J1	3	0.816224 J1	68	2.384	0.5399 J1	< 0.68 U1	0.323	0.01485 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	14	0.0319852 J1	3	68	68	2.436	< 0.083 U1	< 0.68 U1	0.341	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	20	0.0665729 J1	2	1	73	2.288	< 0.083 U1	< 0.68 U1	0.331	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	10.33	< 0.02 U1	6.06	< 0.23 U1	74.8	1.598	< 0.083 U1	< 0.68 U1	0.329	0.013 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/24/2018	Assessment	< 0.93 U1	< 1.05 U1	9.65	< 0.02 U1	6.46	< 0.23 U1	71.73	1.939	< 0.083 U1	< 0.68 U1	0.308	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/15/2018	Assessment	0.02 J1	1.83	12.8	0.069	0.25	0.604	43.5	2.35	< 0.083 U1	1.10	0.243	0.011 J1	0.35	0.3	0.074
2/21/2019	Assessment	0.08 J1	2.51	120	0.24	0.27	3.34	64.5	2.657	0.18	2.49	0.268	0.007 J1	0.7 J1	0.8	< 0.1 U1
5/30/2019	Assessment	< 0.02 U1	0.41	19.6	0.02 J1	0.03 J1	0.246	51.1	2.508	< 0.04 U1	0.03 J1	0.341	< 0.005 U1	< 0.4 U1	0.06 J1	< 0.1 U1
7/24/2019	Assessment	< 0.02 U1	1.07	14.3	0.130	0.03 J1	0.228	57.7	3.45	0.085 J1	0.263	0.283	< 0.005 U1	< 0.4 U1	0.1 J1	< 0.1 U1
2/17/2020	Assessment	< 0.02 U1	0.72	9.6	0.04 J1	< 0.01 U1	0.08 J1	42.3	3.46	0.16	< 0.05 U1	0.273	< 0.004 U1	< 0.4 U1	< 0.03 U1	< 0.1 U1
5/20/2020	Assessment	< 0.02 U1	0.86	11.4	0.07 J1	0.02 J1	0.231	70.0	2.76	0.15	0.08 J1	0.302	< 0.002 U1	< 0.4 U1	0.09 J1	< 0.1 U1
10/14/2020	Assessment	< 0.02 U1	0.84	10.9	0.04 J1	0.01 J1	0.327	45.4	2.169	0.17	0.2 J1	0.274	< 0.002 U1	< 0.4 U1	0.06 J1	< 0.1 U1
2/23/2021	Assessment	< 0.02 U1	0.61	10.6	0.03 J1	0.03 J1	0.1 J1	41.1	1.433	0.17	0.08 J1	0.249	< 0.002 U1	< 0.4 U1	0.04 J1	< 0.1 U1
6/2/2021	Assessment	< 0.02 U1	0.84	10.9	0.066	0.026	0.38	72.9	2.40	0.31	0.09 J1	0.311	< 0.002 U1	0.2 J1	< 0.09 U1	< 0.04 U1
10/20/2021	Assessment	< 0.02 U1	0.57	10.2	0.035 J1	0.019 J1	0.38	42.9	1.73	0.16	0.07 J1	0.250	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.05 J1
6/28/2022	Assessment	< 0.02 U1	0.53	12.6	0.040 J1	0.011 J1	0.40	41.3	6.54	0.09 J1	0.12 J1	0.267	0.003 J1	0.1 J1	< 0.09 U1	< 0.04 U1
11/1/2022	Assessment	0.02 J1	0.62	12.7	0.073	0.019 J1	0.96	41.9	3.81	0.09 J1	0.27	0.278	0.004 J1	< 0.1 U1	< 0.09 U1	< 0.04 U1
6/6/2023	Assessment	< 0.08 U1	1.1	19.6	0.11 J1	< 0.04 U1	1.1 J1	36.8	1.42	< 0.05 U1	0.7 J1	0.254	0.003 J1	< 1 U1	0.5 J1	< 0.2 U1
10/4/2023	Assessment	< 0.08 U1	0.5 J1	11.8	< 0.07 U1	< 0.04 U1	1.3 J1	41.2	2.05	0.06 J1	< 0.5 U1	0.305 M1	< 0.002 U1	< 1 U1	< 0.4 U1	< 0.2 U1
4/1/2024	Assessment	0.012 J1	0.34	12.7	0.023 J1	0.010 J1	0.31	30.3	1.65	0.13 J1	0.07 J1	0.197	< 0.002 U1	< 0.1 U1	0.32 J1	< 0.02 U1
9/10/2024	Assessment	< 0.008 U1	0.35	14.0	0.035 J1	0.014 J1	0.31	42.6	5.99	< 0.05 U1	0.06 J1	0.254	0.003 J1	< 0.1 U1	< 0.04 U1	< 0.02 U1

**Table 1. Groundwater Data Summary
Welsh - Landfill**

Geosyntec Consultants, Inc.

Notes:

Combined radium values were calculated from the sum of the reported radium-226 and radium-228 results.

Radium data quality flags were not included. Reported negative radium-226 or radium-228 results were replaced with zero.

--: Not analyzed

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag.

In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

mg/L: milligrams per liter

P1: The precision between duplicate results was above acceptance limits.

pCi/L: picocuries per liter

Q1: Sample received in in appropriate sample container.

S7: Sample did not achieve constant weight.

SU: standard unit

µg/L: micrograms per liter

APPENDIX 2

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

STATISTICAL ANALYSIS SUMMARY, LANDFILL

J. Robert Welsh Plant Pittsburg, Texas

Prepared for

American Electric Power
1 Riverside Plaza
Columbus, Ohio 43215-2372

Prepared by

Geosyntec Consultants, Inc.
500 West Wilson Bridge Road, Suite 250
Worthington, Ohio 43085

Project Number: CHA8500B

July 17, 2024

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	1
2. LANDFILL EVALUATION.....	2
2.1 Data Validation and QA/QC	2
2.2 Statistical Analysis	2
2.2.1 Evaluation of Potential Appendix IV SSLs.....	2
2.2.2 Evaluation of Potential Appendix III SSIs	3
2.3 Conclusions	3
3. REFERENCES	4

LIST OF TABLES

Table 1:	Groundwater Data Summary
Table 2:	Appendix IV Groundwater Protection Standards
Table 3:	Appendix III Data Summary

LIST OF ATTACHMENTS

Attachment A:	Certification by Qualified Professional Engineer
Attachment B:	Data Quality Review Memoranda
Attachment C:	Statistical Analysis Output

ACRONYMS AND ABBREVIATIONS

CCR	coal combustion residuals
GWPS	groundwater protection standard
LPL	lower prediction limit
QA/QC	quality assurance and quality control
SSI	statistically significant increase
SSL	statistically significant level
SU	standard units
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
UPL	upper prediction limit

1. EXECUTIVE SUMMARY

In accordance with Texas Commission on Environmental Quality (TCEQ) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, “CCR rule”), groundwater monitoring has been conducted at the Landfill, an existing CCR unit at the Welsh Power Plant in Pittsburg, Texas. Recent groundwater monitoring results were used to identify concentrations of Appendix IV constituents that are above site-specific groundwater protection standards (GWPSs).

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron, total dissolved solids (TDS), and sulfate at the Landfill. An alternative source was not identified following the detection monitoring event, so assessment monitoring was initiated and GWPSs were set in accordance with § 352.951(b) (Geosyntec 2018). Two assessment monitoring events were conducted at the Landfill in February and April 2024 in accordance with § 352.951(a). The results of these assessment sampling events are documented in this report.

Before the statistical analyses were conducted, the 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 that would impact data usability were identified.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Confidence intervals were calculated for Appendix IV parameter data at the compliance wells to assess whether any were present at statistically significant levels (SSLs) above previously established GWPS. No SSLs were identified; however, concentrations of Appendix III parameters remained above background. Therefore, the unit will remain in assessment monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

2. LANDFILL EVALUATION

2.1 Data Validation and QA/QC

During the assessment monitoring program in 2024 to date, two sets of samples (February and April 2024) were collected for analysis for all Appendix III and Appendix IV parameters. Samples were collected from each background and compliance well during the April 2024 event, whereas samples were collected only from the compliance well locations during the February 2024 event. A summary of data collected during these assessment monitoring events may be found in Table 1.

Chemical analysis was completed by a National Environmental Laboratory Accreditation Program–certified analytical laboratory. The laboratory completed analysis of quality assurance and quality control (QA/QC) samples such as laboratory reagent blanks, continuing calibration verification samples, and laboratory fortified blanks.

A data quality review was completed to assess whether the data met the objectives outlined in TCEQ Draft Technical Guidance No. 32 related to groundwater sampling and analysis (TCEQ 2020). As noted in the review memoranda (Attachment B), the data were determined usable for supporting project objectives. 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.10.0.16 statistics software. The export file was checked against the analytical data for transcription errors and completeness.

2.2 Statistical Analysis

Statistical analyses for the Landfill were conducted in accordance with the December 2021 Statistical Analysis Plan (Geosyntec 2021). Time series plots and results for all completed statistical tests are provided in Attachment C. The data obtained in February and April 2024 were screened for potential outliers. No outliers were identified for these events.

2.2.1 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$), but nonparametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the nondetect frequency was too high). An SSL was concluded if the lower confidence limit was above the GWPS (i.e., if the entire confidence interval was above the GWPS). The calculated confidence limits (Attachment C) were compared to the GWPS provided in Table 2. The GWPSs were established as either the greater value of the background concentration calculated during a previous statistical analysis or the maximum contaminant level (Geosyntec 2024).

No SSLs were identified at the Welsh Landfill.

2.2.2 Evaluation of Potential Appendix III SSIs

The Appendix III results were analyzed to assess whether concentrations of Appendix III parameters at the compliance wells were above background concentrations. Data collected during the April 2024 assessment monitoring event from each compliance well were compared to previously established prediction limits to assess whether the results were statistically above background limits. The results from this event and the prediction limits are summarized in Table 3. The following were detected above the upper prediction limits (UPLs) or, in the case of pH, below the lower prediction limits (LPLs):

- Boron concentrations were above the interwell UPL of 0.901 mg/L at AD-11 (1.07 mg/L), AD-13 (1.23 mg/L), and AD-14 (0.923 mg/L).
- Fluoride concentrations were above the interwell UPL of 0.583 mg/L at AD-11 (0.66 mg/L) and AD-13 (0.74 mg/L).
- pH values were below the interwell LPL of 4.8 standard units (SU) at AD-11 (4.0 SU) and AD-14 (3.8 SU).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the April 2024 sample was above the UPL or, in the case of pH, below the LPL. Based on this evaluation, concentrations of boron and fluoride appear to be above background concentrations, and pH values appear to be below background values. Therefore, the unit will remain in assessment monitoring.

2.3 Conclusions

Annual and semiannual assessment monitoring events were conducted in accordance with the TCEQ CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that prevented data usage. A review of outliers identified no potential outliers in the February or April 2024 data. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval was above the GWPS. No SSLs were identified. Appendix III results were compared to previously calculated prediction limits, with values above the UPL detected for boron and fluoride and with results below the LPL for pH.

Based on this evaluation, the Welsh Landfill CCR unit will remain in assessment monitoring.

3. REFERENCES

- Geosyntec. 2018. Statistical Analysis Summary – Landfill, J. Robert Welsh Plant, Pittsburg, Texas. Geosyntec Consultants, Inc. January.
- Geosyntec. 2021. Statistical Analysis Plan – J. Robert Welsh Plant. Geosyntec Consultants, Inc. September.
- Geosyntec. 2024. Statistical Analysis Summary – Landfill, J. Robert Welsh Plant. Geosyntec Consultants, Inc. January.
- TCEQ. 2020. Draft Technical Guidance No. 32. Coal Combustion Residuals Groundwater Monitoring and Corrective Action. Texas Commission on Environmental Quality. May.

TABLES

**Table 1. Groundwater Data Summary
Statistical Analysis Summary
Welsh Plant - Landfill**

Parameter	Unit	AD-1	AD-5	AD-11		AD-13		AD-14		AD-17
		Background	Background	Compliance		Compliance		Compliance		Background
		4/1/2024	4/2/2024	2/26/2024	4/2/2024	2/26/2024	4/2/2024	2/26/2024	4/2/2024	4/1/2024
Antimony	µg/L	0.073 J1	0.015 J1	0.016 J1	0.021 J1	0.020 J1	0.028 J1	0.028 J1	0.023 J1	0.012 J1
Arsenic	µg/L	0.26	2.94	0.86	0.74	0.29	0.42	0.43	0.22	0.34
Barium	µg/L	190 M1	78.4	14.7	16.9	36.5	62.2	57.8	33.1	12.7
Beryllium	µg/L	0.524	0.063	2.37	1.33	0.680	0.503	0.571	0.531	0.023 J1
Boron	mg/L	0.781	0.039 J1	1.18	1.07	1.13	1.23	1.14	0.923	0.096
Cadmium	µg/L	0.032	0.007 J1	0.402	0.363	0.122	0.086	1.03	0.423	0.010 J1
Calcium	mg/L	44.9 M1	26.0	10.8	11.6	4.90	11.0	13.2	2.91	131
Chloride	mg/L	3.33	32.9	10.2	9.75	6.69	4.4	5.36	2.01	31.8
Chromium	µg/L	0.28 J1	0.26 J1	0.41	0.58	0.34	0.33	0.51	0.41	0.31
Cobalt	µg/L	1.53	11.5	18.1	17.0	4.91	3.26	9.91	5.25	30.3
Combined Radium	pCi/L	2.39	2.34	2.32	1.86	2.44	1.73	1.75	0.53	1.65
Fluoride	mg/L	0.23	0.18	0.95	0.66	0.55	0.74	0.21	0.14	0.13 J1
Lead	µg/L	0.14 J1	0.06 J1	1.35	1.02	0.10 J1	0.13 J1	0.32	0.21	0.07 J1
Lithium	mg/L	0.00378	0.0753	0.0310	0.0196	0.0158	0.00972	0.0116	0.00849	0.197
Mercury	µg/L	0.005 U1	0.005 U1	0.008	0.008	0.006	0.005	0.332	0.02 U1	0.005 U1
Molybdenum	µg/L	0.3 J1	0.1 J1	0.5 U1	0.5 U1	0.5 U1	0.1 J1	0.5 U1	0.5 U1	0.5 U1
Selenium	µg/L	7.67	0.08 J1	2.45	2.22	0.54	0.53	3.79	3.23	0.32 J1
Sulfate	mg/L	104	41.4	495	437	154	151	192	92.7	950
Thallium	µg/L	0.03 J1	0.03 J1	0.17 J1	0.16 J1	0.08 J1	0.05 J1	0.06 J1	0.03 J1	0.2 U1
Total Dissolved Solids	mg/L	310	210	740	670	290	270	360	200	1,280
pH	SU	5.7	5.7	4.0	4.0	5.3	5.3	4.6	3.8	5.4

Notes:

J1: Estimated value. Parameter was detected in concentrations below the reporting limit.

M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

mg/L: milligrams per liter

pCi/L: picocuries per liter

SU: standard unit

U1: Non-detect value. For statistical analysis, parameters that were not detected were replaced with the reporting limit.

µg/L: micrograms per liter

**Table 2. Appendix IV Groundwater Protection Standards
Statistical Analysis Summary
Welsh Plant – Landfill**

Constituent Name	MCL	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.00600	0.00317	0.00600
Arsenic, Total (mg/L)	0.0100	0.00628	0.0100
Barium, Total (mg/L)	2.00	0.510	2.00
Beryllium, Total (mg/L)	0.00400	0.00108	0.00400
Cadmium, Total (mg/L)	0.00500	0.00400	0.00500
Chromium, Total (mg/L)	0.100	0.00227	0.100
Cobalt, Total (mg/L)	n/a	0.0748	0.0748
Combined Radium, Total (pCi/L)	5.00	4.51	5.00
Fluoride, Total (mg/L)	4.00	0.583	4.00
Lead, Total (mg/L)	n/a	0.00338	0.00338
Lithium, Total (mg/L)	n/a	0.394	0.394
Mercury, Total (mg/L)	0.00200	0.0000330	0.00200
Molybdenum, Total (mg/L)	n/a	0.00243	0.00243
Selenium, Total (mg/L)	0.0500	0.01010	0.0500
Thallium, Total (mg/L)	0.00200	0.00125	0.00200

Notes:

1. Calculated UTL (upper tolerance limit) represents site-specific background values.
2. Grey cells indicate the GWPS is based on the calculated UTL. Either the UTL is higher than the MCL or an MCL does not exist.

GWPS: groundwater protection standard

MCL: maximum contaminant level

mg/L: milligrams per liter

n/a: not applicable

pCi/L: picocuries per liter

**Table 3. Appendix III Data Summary
Statistical Analysis Summary
Welsh - Landfill**

Analyte	Unit	Description	AD-11	AD-13	AD-14
			4/2/2024	4/2/2024	4/2/2024
Boron	mg/L	Interwell Background Value (UPL)	0.901		
		Analytical Result	1.07	1.23	0.923
Calcium	mg/L	Intrawell Background Value (UPL)	24.5	40.7	26.9
		Analytical Result	11.6	11.0	2.91
Chloride	mg/L	Intrawell Background Value (UPL)	13.7	21.3	11.5
		Analytical Result	9.75	4.4	2.01
Fluoride	mg/L	Interwell Background Value (UPL)	0.583		
		Analytical Result	0.66	0.74	0.14
pH	SU	Interwell Background Value (UPL)	6.9		
		Interwell Background Value (LPL)	4.8		
		Analytical Result	4.0	5.3	3.8
Sulfate	mg/L	Intrawell Background Value (UPL)	745	365	269
		Analytical Result	437	151	92.7
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	1,150	656	527
		Analytical Result	670	270	200

Notes:

1. Bold values exceed the background value.

2. Background values are shaded gray.

LPL: lower prediction limit

mg/L: milligrams per liter

SU: standard units

UPL: upper prediction limit

ATTACHMENT A

Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Welsh Landfill CCR management area and that the requirements of § 352.931(a) have been met.

David Anthony Miller

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature



112498

License Number

Texas

Licensing State

07.17.2024

Date

ATTACHMENT B

Data Quality Review Memorandum

Memorandum

Date: July 9, 2024
To: David Miller (AEP)
Copies to: Jill Parker-Witt (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Data Quality Review – Welsh Power Plant
February 2024 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Welsh Power Plant, located in Pittsburg, Texas in February 2024. The groundwater samples were collected to comply with the Texas Commission on Environmental Quality’s (TCEQ’s) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, “CCR Rule”). 40 CFR 257 Appendix III and IV constituents were analyzed.

The following sample data groups (SDGs) were associated with the groundwater samples collected during the February 2024 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 240705
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 240855

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32¹ prior to submittal of this data to TCEQ.

The following data quality issues were identified:

- As reported in SDG 240855, chromium, cobalt, magnesium, and strontium were detected in the equipment blank sample “EQUIPMENT BLANK” collected on 2/26/2024. The detected chromium concentration in the equipment blank (0.25 µg/L) was more than 10%

¹ TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.

- As reported in SDG 240855, the relative percent difference (RPD) for chromium concentrations from parent sample “AD-15” and duplicate sample “DUPLICATE” was 39%. The AD-15 chromium results should be considered estimated.
- As reported in SDG 240855, the matrix spike duplicate (MSD) recovery for radium 228 (55%) was below the acceptable limit of 60%. The associated sample (AD-15) was flagged M1: the associated matrix spike (MS) or MSD recovery was outside acceptance limits. The MSD RPD for radium 228 (27.7) was above the acceptable limit of 25. The associated samples (AD-15) was flagged P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits. The AD-15 radium 228 results should be considered estimated.
- As reported in SDG 240855, the duplicate (DUP) RPD for radium 226 (94.4) was above the acceptable limit of 25. The associated samples (AD-15) was flagged P1: The precision between duplicate results was above acceptance limits. The AD-15 radium 226 results should be considered estimated.

Based on these findings, the majority of the data reported in these SDGs are considered accurate and complete. Although the QC failures mentioned above will result in some limitations of data use since the affected results are considered estimated or have elevated reporting limits, the data are considered usable for supporting project objectives.

Memorandum

Date: July 9, 2024
To: David Miller (AEP)
Copies to: Rebecca Jones (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Data Quality Review – Welsh Power Plant
April 2024 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Welsh Power Plant, located in Pittsburg, Texas in April 2024. The groundwater samples were collected to comply with the Texas Commission on Environmental Quality’s (TCEQ’s) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, “CCR Rule”). 40 CFR 257 Appendix III and IV constituents were analyzed.

The following sample data groups (SDGs) were associated with the groundwater samples collected during the April 2024 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241145
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241147
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241148
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241174
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241177
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 241179

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32¹ prior to submittal of this data to TCEQ.

¹ TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

The following data quality issues were identified:

- As reported in SDG 241174, boron, chromium, and cobalt were detected in the equipment blank sample “Equipment Blank-Background” collected on 4/1/2024. The estimated detected boron concentration in the equipment blank (0.014 mg/L) was more than 10% of the detected values for boron in the “AD-5” (0.039 mg/L) and “AD-17” (0.096 mg/L) groundwater samples, which could result in high bias for “AD-5” and “AD-17” groundwater boron results. The estimated detected chromium concentration in the equipment blank (0.35 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 241174, chromium and cobalt were detected in the field blank sample “Field Blank-Background” collected on 4/1/2024. The estimated detected chromium concentration in the field blank (0.24 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 241177, chromium and cobalt were detected in the equipment blank sample “EQUIPMENT BLANK-LANDFILL” collected on 4/2/2024. The estimated detected chromium concentration in the equipment blank (0.21 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 241177, chromium and cobalt were detected in the field blank sample “FIELD BLANK-LANDFILL” collected on 4/2/2024. The estimated detected chromium concentration in the field blank (0.28 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 241179, chromium, cobalt, and lithium were detected in the equipment blank sample “EQUIPMENT BLANK-PBAP” collected on 4/2/2024. The estimated detected chromium concentration in the equipment blank (0.23 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 241179, chromium, cobalt, lithium, and molybdenum were detected in the field blank sample “FIELD BLANK-PBAP” collected on 4/2/2024. The estimated detected chromium concentration in the field blank (0.21 µg/L) was more than 10% of the

detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.

- As reported in SDG 241145, the relative percent difference (RPD) for total dissolved solids (TDS) concentrations from parent sample “AD-1” and duplicate sample “DUPLICATE-BACKGROUND” was 71%. The AD-1 TDS result should be considered estimated.
- As reported in SDG 241177, the mercury result for parent sample “AD-14” was nondetect (<8 ng/L), and the mercury result for duplicate sample “DUPLICATE-LANDFILL” was a detection (3 ng/L); therefore, RPD could not be calculated. The mercury result for the duplicate sample was considered estimated and flagged J1: analyte was detected between the method detection limit and the reporting limit.
- As reported in SDG 241174, the matrix spike duplicate (MSD) recovery for barium (68.5%) and calcium (15.1%) were below the acceptable limit of 75%. The associated sample (AD-1) was flagged M1: the associated matrix spike (MS) or MSD recovery was outside acceptance limits. The AD-1 barium and calcium results should be considered estimated.
- As reported in SDG 241179, the MSD recovery for radium-228 (48%) was below the acceptable limit of 60%. The associated sample (AD-9) was flagged M1: the associated MS or MSD recovery was outside acceptance limits. The AD-9 radium-228 result should be considered estimated.
- The recovery on laboratory control spike (LCS) sample “PB24041611” (159%) was above the acceptable limit of 125%. Samples associated with that QC batch on SDG 241174 were flagged L1: the associated LCS or LCS duplicate (LCSD) recovery was outside acceptance limits. The associated results should be considered estimated.
- The recovery on LCS sample “PB24041612” (67.3%) was below the acceptable limit of 75%. Samples associated with that QC batch on SDGs 241177 and 241179 were flagged L1: the associated LCS or LCSD recovery was outside acceptance limits. The associated results should be considered estimated. The RPD for the LCS/LCSD pair associated with this QC sample (27.5%) was above the acceptable limit of 25%. Samples associated with that QC batch on SDGs 241177 and 241179 were flagged P2: the precision on the LCSD was above acceptance limits. The associated results should be considered estimated.

Based on these findings, the majority of the data reported in these SDGs are considered accurate and complete. Although the QC failures mentioned above will result in some limitations of data

use since the affected results are considered estimated or have elevated reporting limits, the data are considered usable for supporting project objectives.

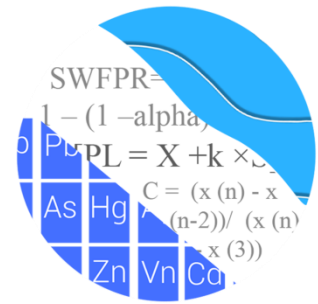
ATTACHMENT C

Statistical Analysis Output

GROUNDWATER STATS CONSULTING

June 10, 2024

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
500 W. Wilson Bridge Road, Suite 250
Worthington, OH 43085



Re: Welsh Landfill – February & April 2024 Assessment Monitoring Report

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis of groundwater data for the February and April 2024 Assessment Monitoring report for American Electric Power Inc.'s Welsh Landfill. The analysis complies with the Texas Commission of Environmental Quality Rule 30 TAC 352 as well as with the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the Coal Combustion Residual (CCR) program in 2016. Below is a list of the monitoring well network, as provided by Geosyntec Consultants. Note that originally the network included upgradient well AD-18; however, further research, reportedly, identified that this well was not providing adequate representation of the groundwater quality upgradient of this site and exhibited different chemical properties from the neighboring upgradient wells. Therefore, data from this well is no longer included in the statistical analysis.

- **Upgradient wells:** AD-1, AD-5, and AD-17
- **Downgradient wells:** AD-11, AD-13, and AD-14

Note that according to Geosyntec Consultants, the upgradient wells were not sampled in February 2024, but were sampled during the April 2024 sample event.

Data were sent electronically, and the statistical analysis was reviewed by Andrew Collins, Project Manager of Groundwater Stats Consulting (GSC). The analysis was conducted according to the Statistical Analysis Plan prepared by GSC and approved by Dr. Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC.

The CCR Assessment Monitoring program consists of the following constituents:

- **Appendix IV** (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

Time series plots for Appendix IV parameters are provided for all wells and constituents and are used to evaluate concentrations over the entire record (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B). For all constituents, a substitution of the most recent reporting limit is used for non-detect data. While the reporting limits may vary from well to well, a single reporting limit substitution is used across all wells for a given parameter in the time series plots since the wells are plotted as a group. Note that due to elevated reporting limits in upgradient well AD-17 for antimony, lead, molybdenum, and selenium, and thallium during the October 2023 event, the most recent respective reporting limit from other wells was substituted across all wells for each of these constituents during this event. Additionally, due to elevated historic reporting limits for fluoride, a reporting limit of 0.15 mg/L was substituted across all wells.

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. Values previously identified and flagged as outliers may be seen in the Outlier Summary following this letter (Figure C) and are plotted in a lighter font and disconnected symbol on the time series graphs.

Summary of Statistical Methods – Appendix IV Parameters

Parametric tolerance 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 non-detects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (USEPA, 2009), data are analyzed using either parametric or non-parametric tolerance limits as appropriate.

- No statistical analyses are required on wells and analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% non-detects, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the most recent practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, the Kaplan-Meier non-detect 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 tolerance limits are used on data containing greater than 50% non-detects.

Summary of Background Update – Conducted in January 2024

Outlier Analysis

Prior to evaluating Appendix IV parameters, upgradient well data are screened through both visual screening and Tukey's outlier test for potential outliers and extreme trending patterns that would lead to artificially elevated statistical limits. All flagged values may be seen on the Outlier Summary following this letter (Figure C). As mentioned above, due to elevated reporting limits in upgradient well AD-17 for antimony, lead, molybdenum, and selenium, and thallium during the October 2023 event, the most recent respective reporting limit from other wells was substituted across all wells for each of these constituents during the update.

Tukey's outlier test on pooled upgradient well data through October 2023 identified outliers for chromium, lead, and mercury. The values identified by Tukey's test, except for the highest value for chromium at AD-17, were either similar to concentrations upgradient of the facility or were lower than the respective Maximum Contaminant Level (MCL); therefore, these values were not flagged as outliers. Tukey's outlier test and visual screening confirmed the previously flagged highest measurement of chromium at AD-17 along with other flagged observations. No additional measurements were flagged among upgradient wells for Appendix IV parameters during the update.

Additionally, downgradient well data through October 2023 were screened through visual screening using time series graphs. Since the downgradient well data are used to construct confidence intervals, a regulatory conservative approach is taken in that values that are marginally high relative to the rest of the data are retained unless there is particular justification for excluding them. No additional outliers among downgradient

wells for Appendix IV parameters were flagged at that time. All flagged values may be seen on the Outlier Summary following this letter (Figure C).

Interwell Upper Tolerance Limits

Upper tolerance limits were used to calculate background limits from pooled upgradient well data through October 2023 for Appendix IV parameters (Figure D). These limits are updated on an annual basis and will be updated again during the Fall 2024 sample event. Parametric tolerance limits are calculated, with a target of 95% confidence and 95% coverage, when data follow a normal or transformed-normal distribution. When data contained greater than 50% non-detects or did not follow a normal or transformed-normal distribution, non-parametric tolerance limits were constructed using the highest background measurement. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples.

Groundwater Protection Standards

These background limits were compared to the Maximum Contaminant Levels (MCLs) as shown in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the confidence interval comparisons (Figure E).

Evaluation of Appendix IV Parameters – February & April 2024

Time series plots were used to visually identify potential outliers in downgradient wells during the February and April 2024 sample events. When suspected outliers are identified, Tukey's outlier test is used to formally test whether measurements are statistically significant. As mentioned above, high outliers are 'cautiously' flagged in the downgradient wells when measurements are clearly much different from remaining data within a given well. This is intended to be a regulatory conservative approach in that it will reduce the variance and thus reduce the width of parametric confidence intervals; although it will also reduce the mean and thus lower the entire interval. The intent is to better represent the actual downgradient mean. No additional suspected outliers were identified.

Confidence Intervals

Confidence intervals were then constructed with data through April 2024 on downgradient wells for each of the Appendix IV parameters and compared to the GWPS (i.e., the highest limit of the MCL or background limit as discussed above). When data followed a normal or transformed-normal distribution, parametric confidence intervals

were used for Appendix IV parameters. Nonparametric confidence intervals, which use the largest and smallest order statistics depending on the sample size as interval limits, were constructed when data did not follow a normal or transformed-normal distribution or when there were greater than 50% non-detects. The lower confidence limit, which is constructed with 99% confidence for parametric confidence intervals, is compared to the GWPS prepared as described above. The confidence level associated with nonparametric confidence intervals is dependent upon the number samples available.

Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. No exceedances were noted for any of the well/constituent pairs. A summary of the confidence interval results follows this letter (Figure F).

Trend Test Evaluation – Appendix IV

When confidence interval exceedances are identified in downgradient wells, data are further evaluated using the Sen's Slope/Mann Kendall trend test to determine whether concentrations are statistically increasing, decreasing, or stable at the 95% confidence level. Utilizing the 95% confidence level for trend tests readily identifies significant trends and is more sensitive than the 99% confidence level without drastically increasing the false negative rate. Upgradient wells are included in the trend analyses for all parameters found to exceed their confidence interval in downgradient wells. When similar patterns exist upgradient of the site, it is an indication of variability in groundwater which may be unrelated to practices at the site. Since no confidence interval exceedances were identified, trend tests were not required.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Welsh Landfill. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

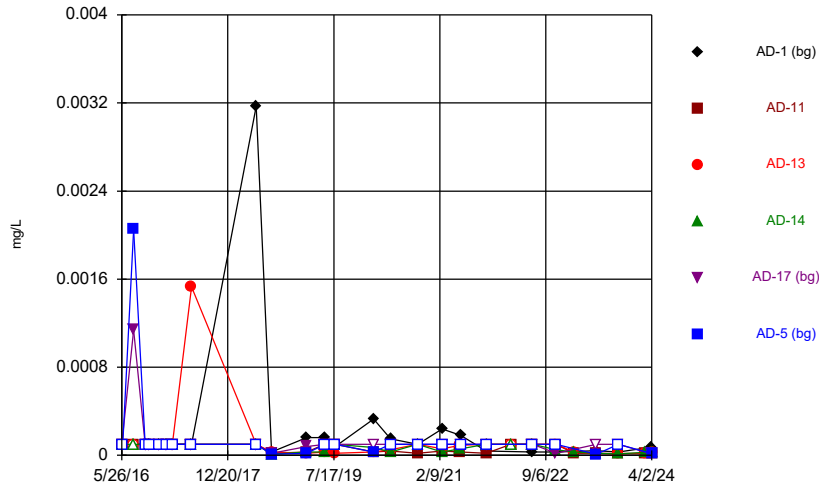


Tristan Clark
Groundwater Analyst



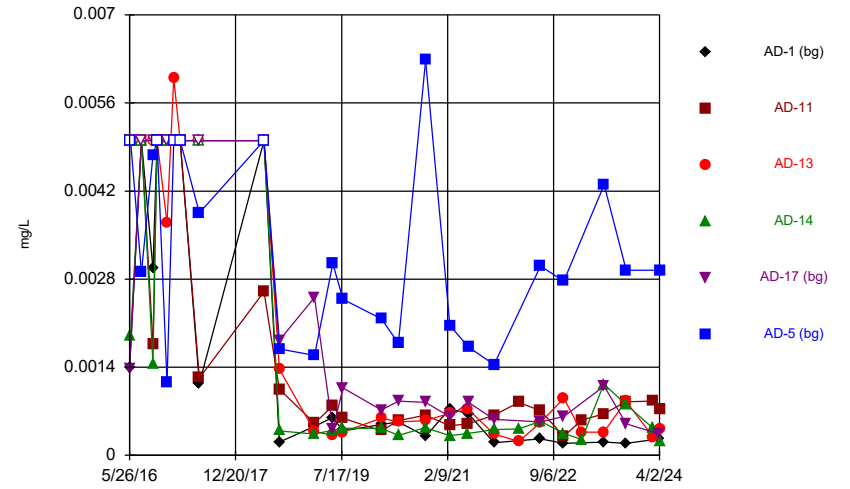
Andrew Collins
Project Manager

Time Series



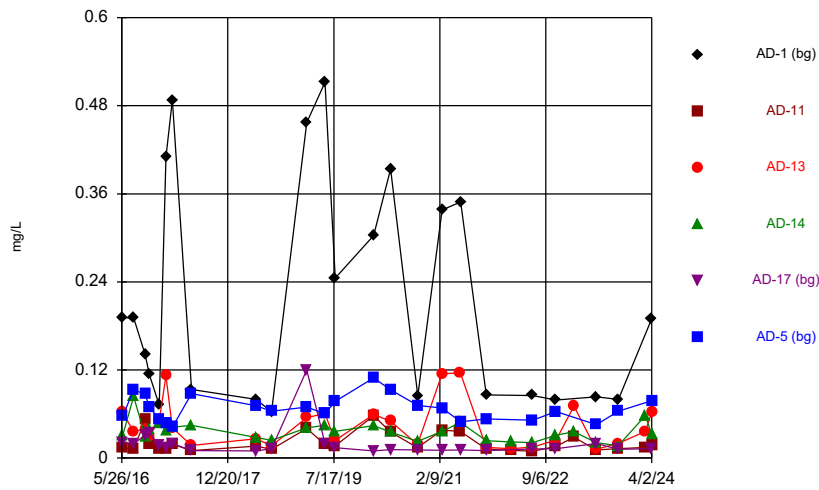
Constituent: Antimony, total Analysis Run 6/8/2024 5:09 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



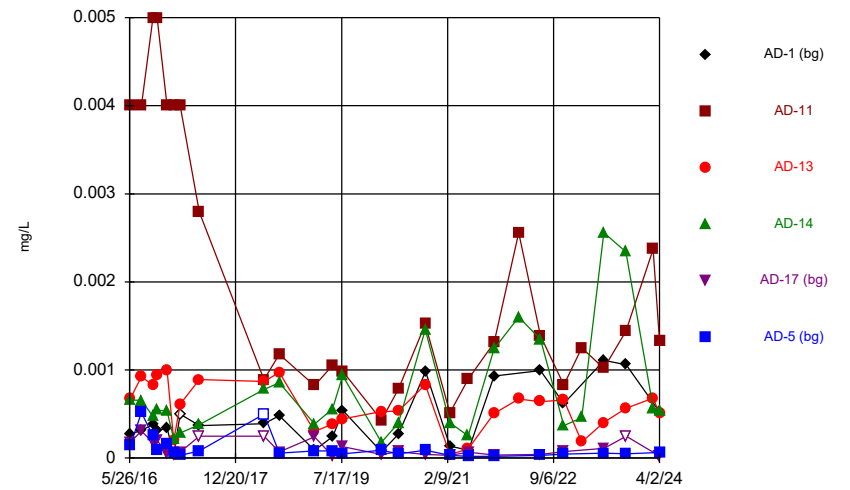
Constituent: Arsenic, total Analysis Run 6/8/2024 5:09 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



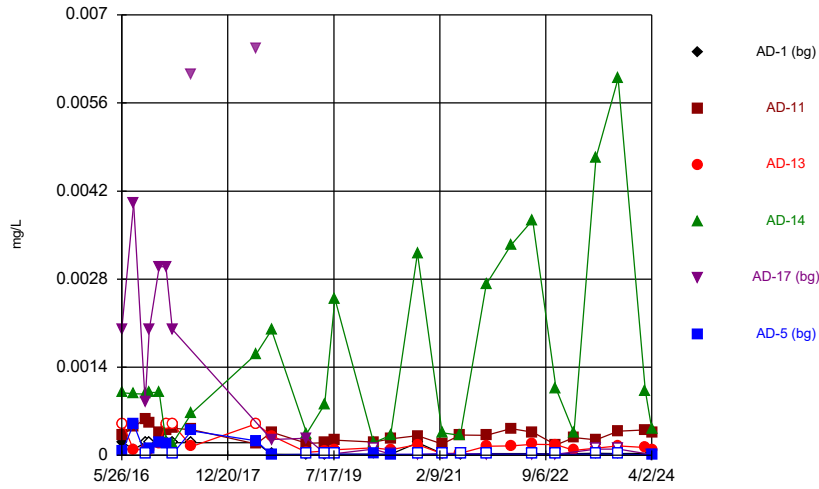
Constituent: Barium, total Analysis Run 6/8/2024 5:09 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



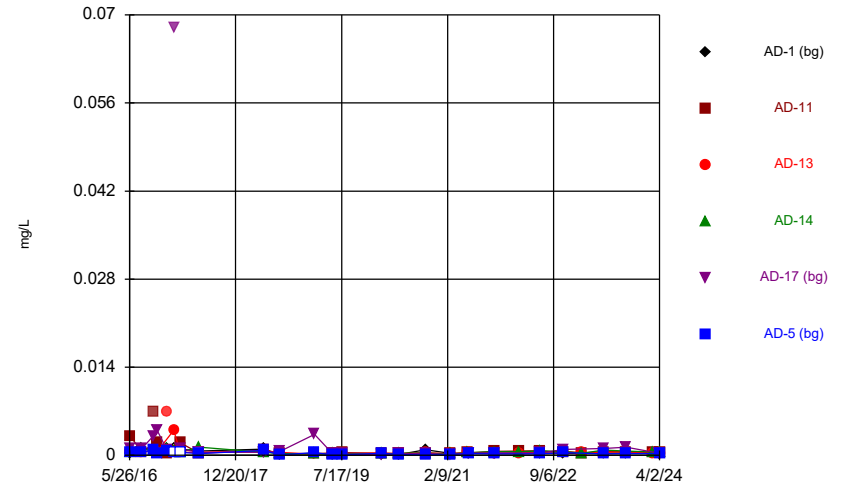
Constituent: Beryllium, total Analysis Run 6/8/2024 5:09 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



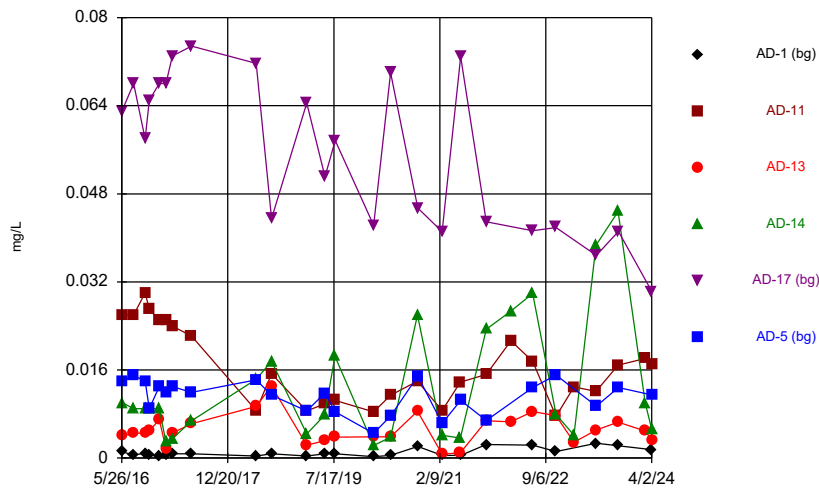
Constituent: Cadmium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



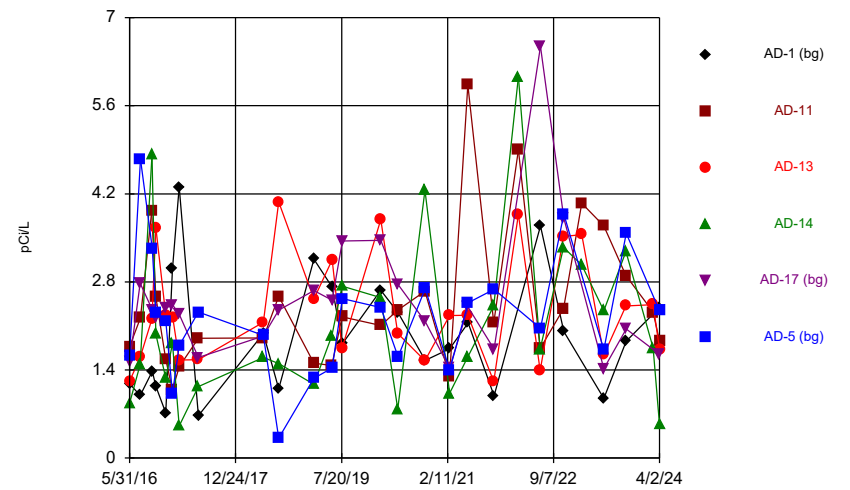
Constituent: Chromium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



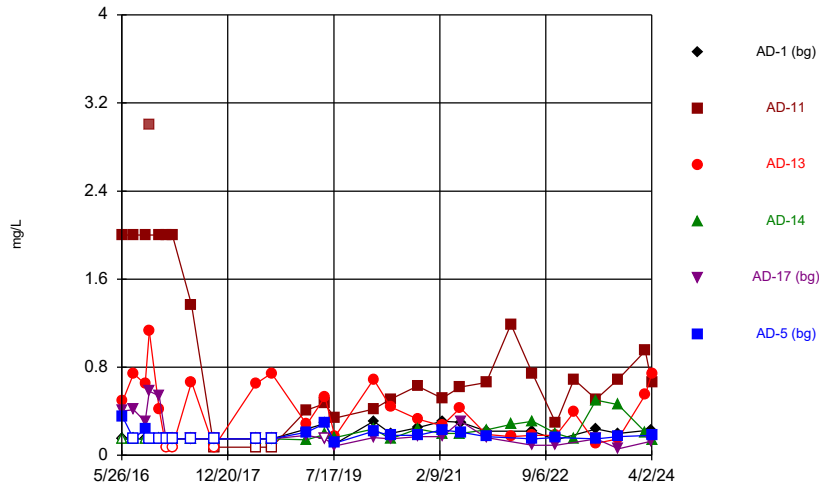
Constituent: Cobalt, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



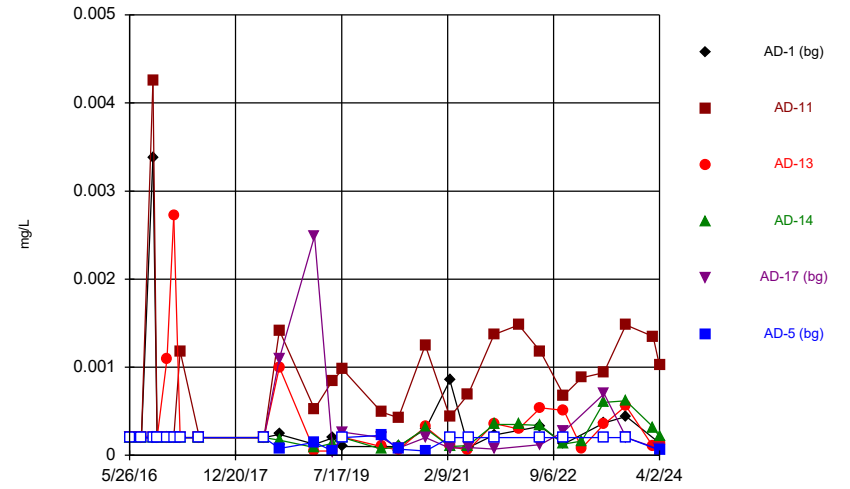
Constituent: Combined Radium 226 + 228 Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



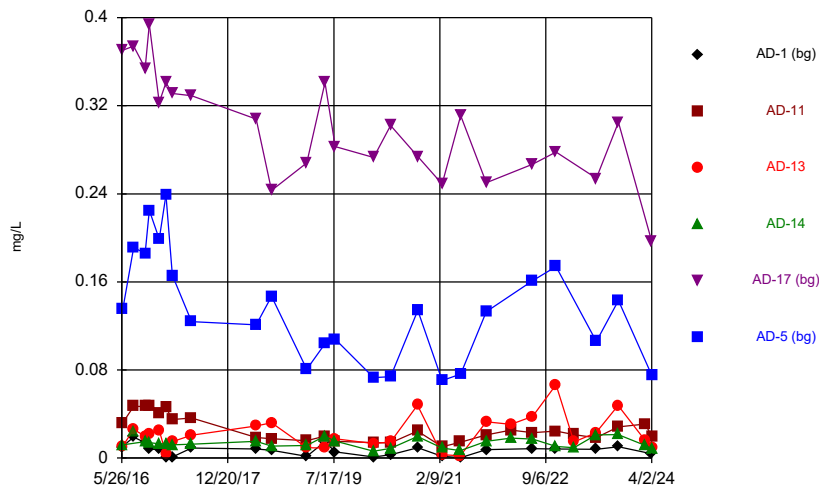
Constituent: Fluoride, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



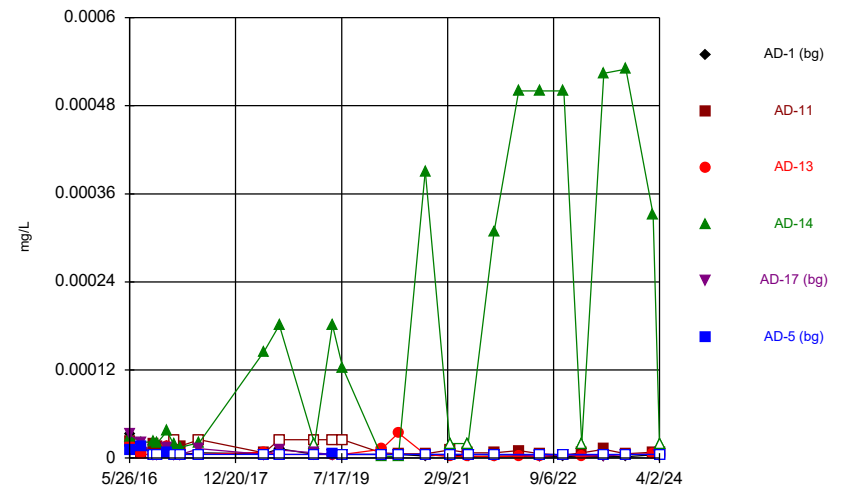
Constituent: Lead, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



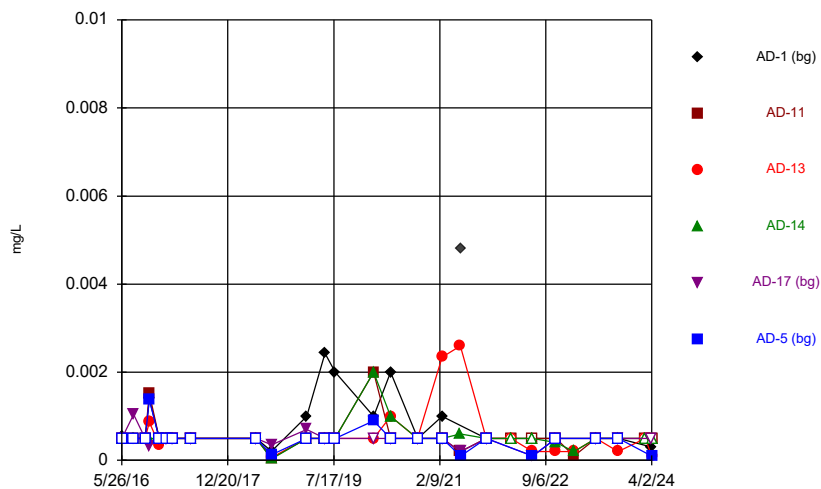
Constituent: Lithium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



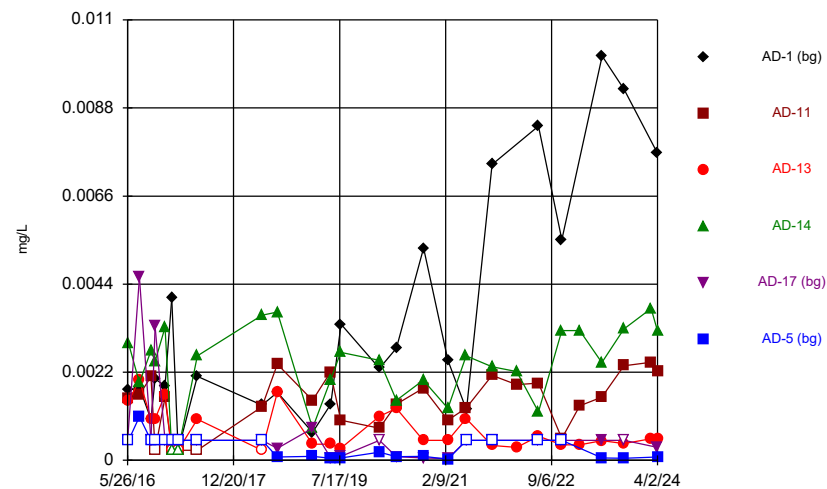
Constituent: Mercury, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Time Series



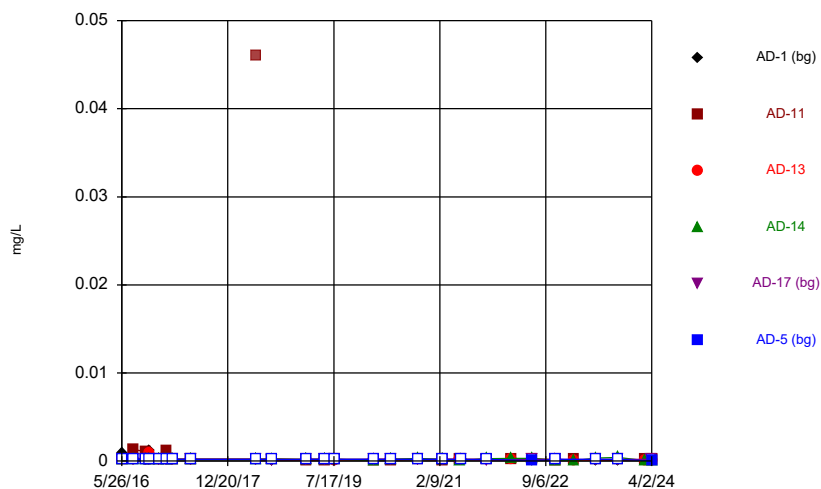
Constituent: Molybdenum, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
 Welsh Landfill Data: Welsh LF

Time Series



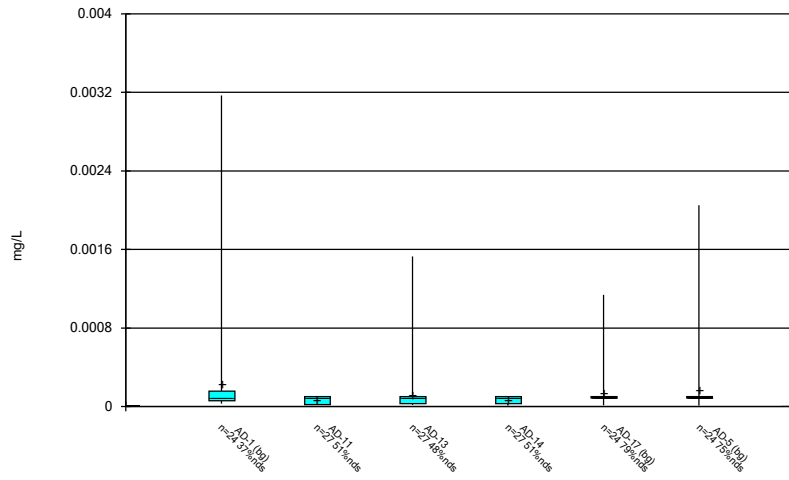
Constituent: Selenium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
 Welsh Landfill Data: Welsh LF

Time Series



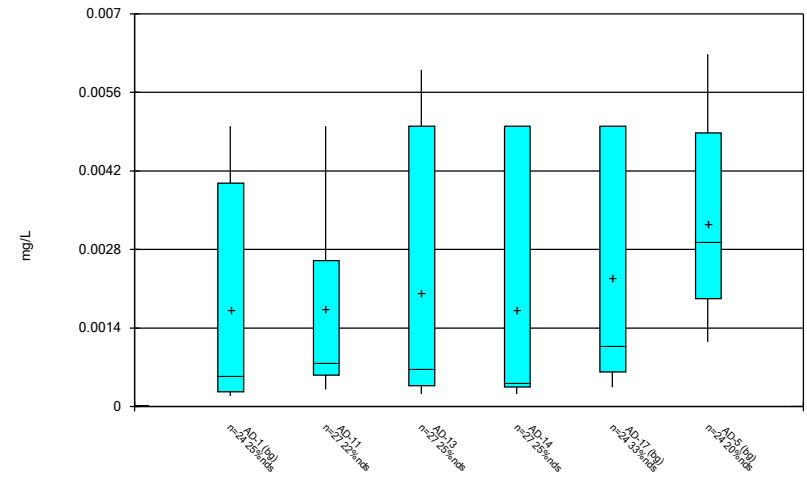
Constituent: Thallium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
 Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



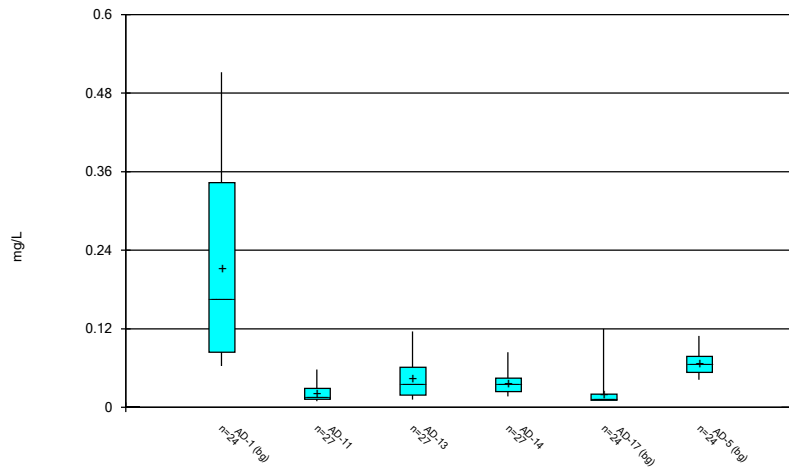
Constituent: Antimony, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



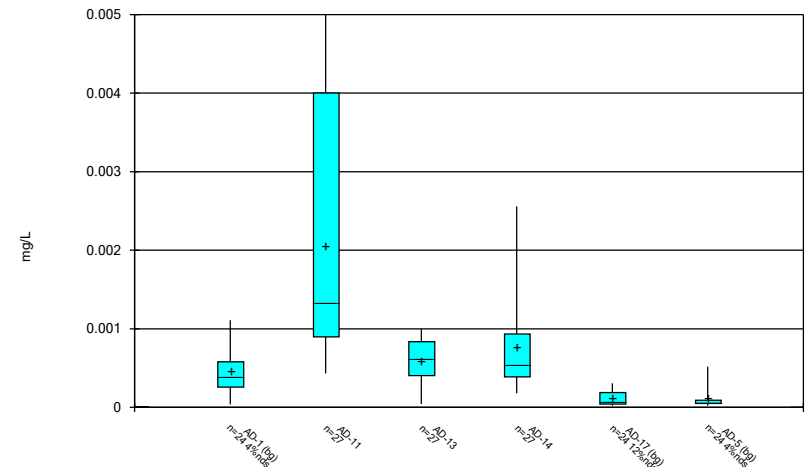
Constituent: Arsenic, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



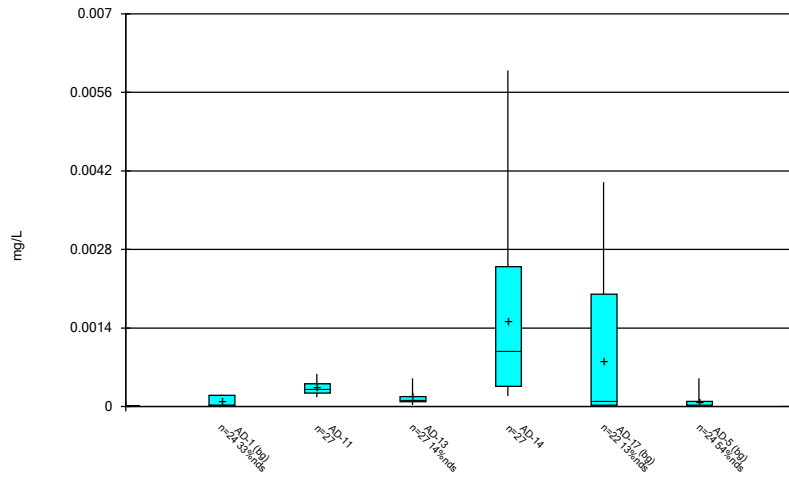
Constituent: Barium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



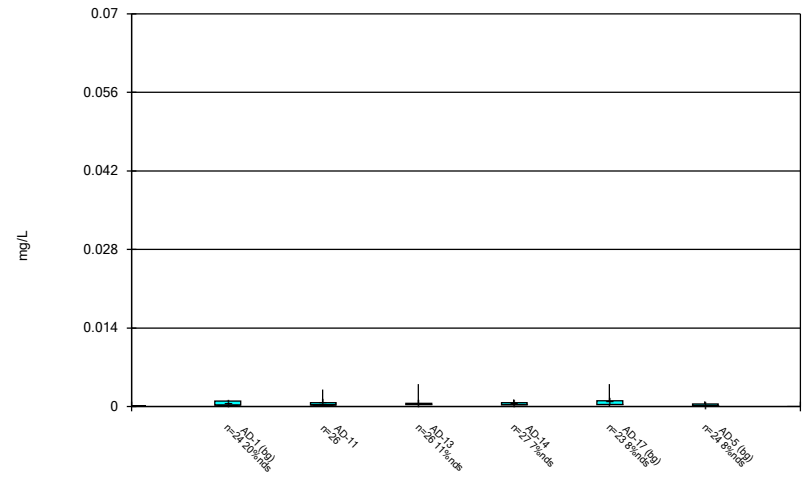
Constituent: Beryllium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



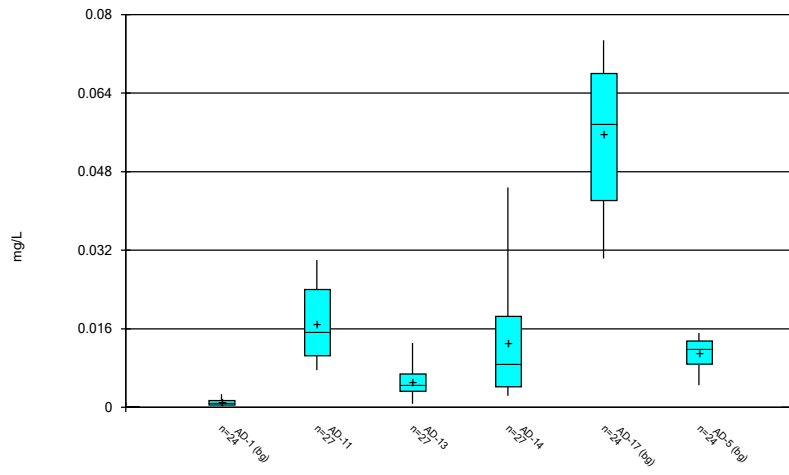
Constituent: Cadmium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



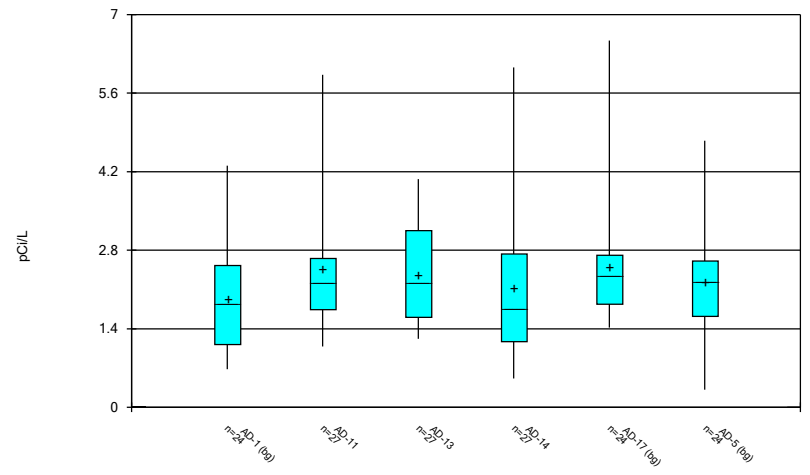
Constituent: Chromium, total Analysis Run 6/8/2024 5:10 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



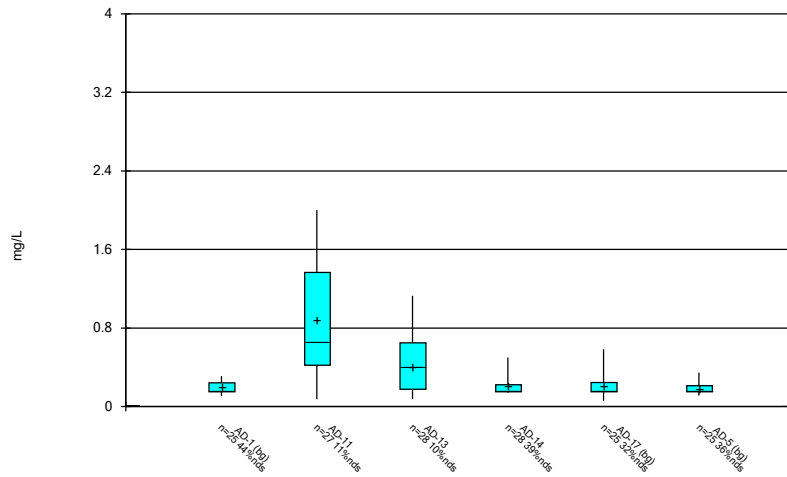
Constituent: Cobalt, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



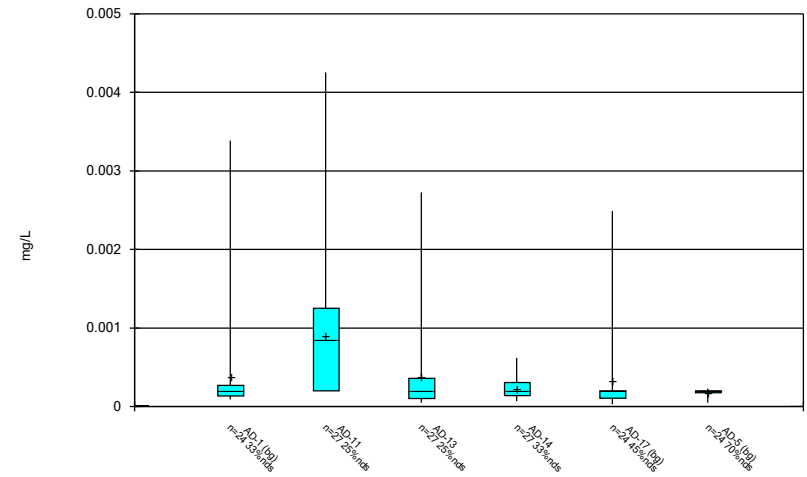
Constituent: Combined Radium 226 + 228 Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



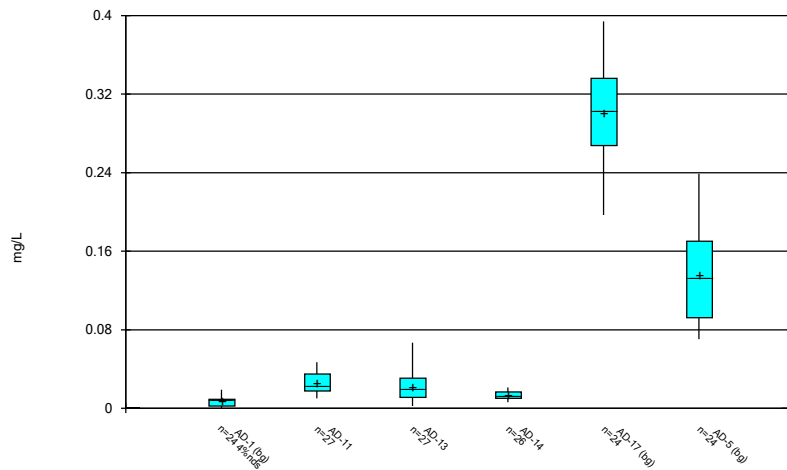
Constituent: Fluoride, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



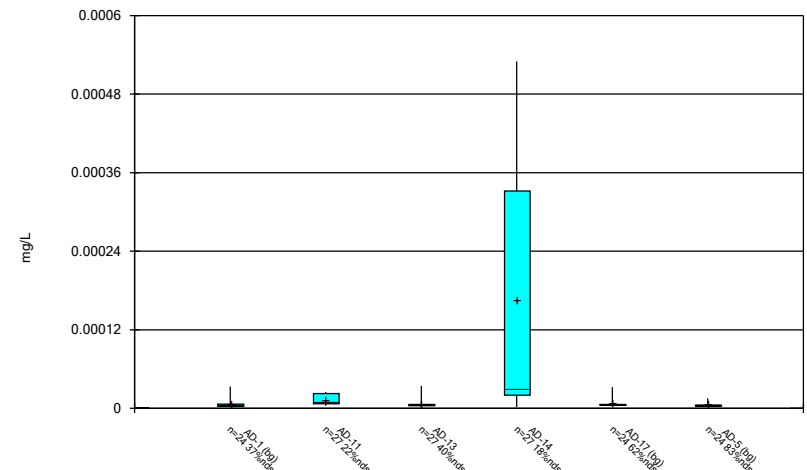
Constituent: Lead, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



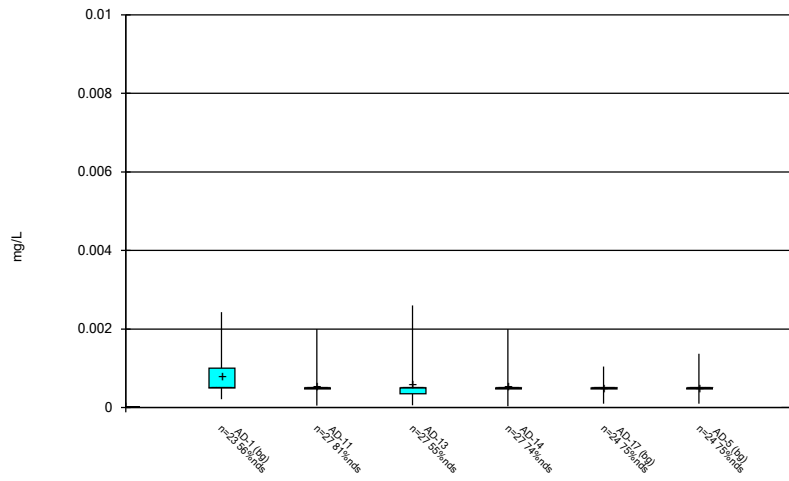
Constituent: Lithium, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



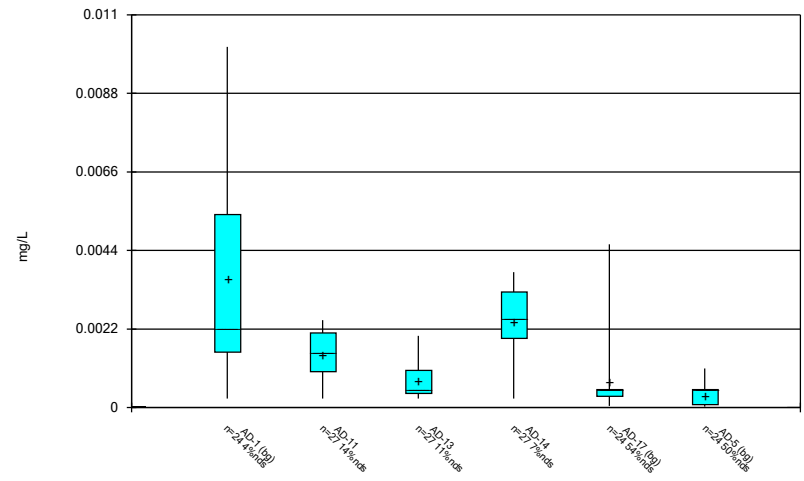
Constituent: Mercury, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



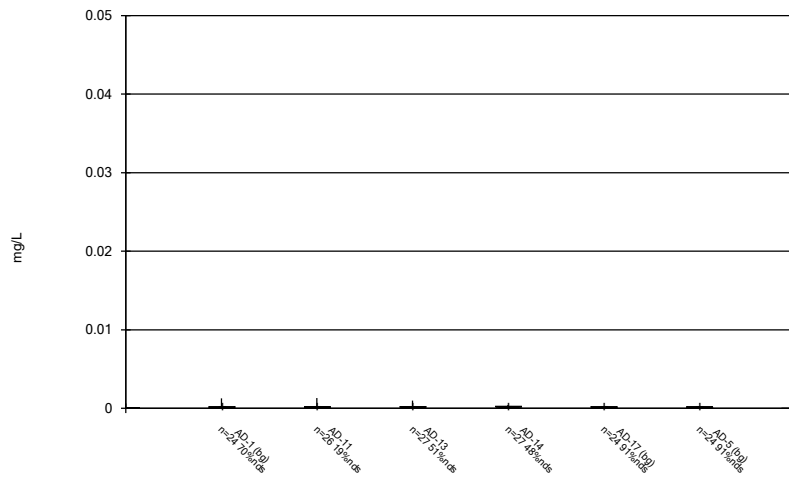
Constituent: Molybdenum, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 6/8/2024 5:11 PM View: Default - Appendix IV
Welsh Landfill Data: Welsh LF

Outlier Summary

Welsh Landfill Data: Welsh LF Printed 6/5/2024, 5:49 PM

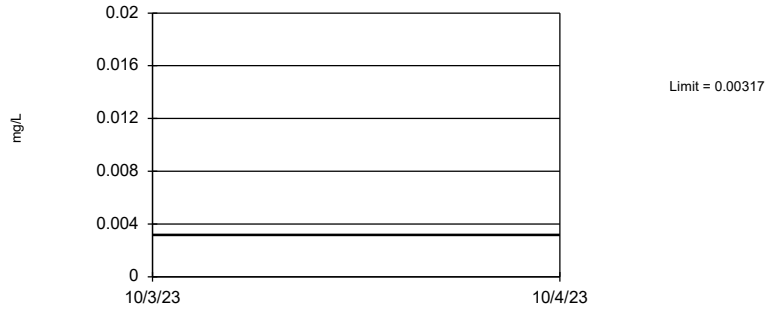
	AD-17 Cadmium, total (mg/L)	AD-11 Chromium, total (mg/L)	AD-13 Chromium, total (mg/L)	AD-17 Chromium, total (mg/L)	AD-11 Fluoride, total (mg/L)	AD-14 Lithium, total (mg/L)	AD-1 Molybdenum, total (mg/L)	AD-11 Thallium, total (mg/L)
7/29/2016					0.024 (o)			
9/30/2016	0.007 (o)							
10/21/2016				3 (o)				
12/14/2016		0.007 (o)						
1/20/2017			0.068 (O)					
6/8/2017	0.00606 (o)							
5/23/2018							0.046 (o)	
5/24/2018	0.00646 (o)							
6/2/2021						0.0048 (o)		

Upper Tolerance Limits Summary Table

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 1/4/2024, 2:30 PM

<u>Constituent</u>	<u>Upper Lim.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony, total (mg/L)	0.00317	69	n/a	n/a	66.67	n/a	n/a	0.02904	NP Inter(NDs)
Arsenic, total (mg/L)	0.00628	69	n/a	n/a	27.54	n/a	n/a	0.02904	NP Inter(normality)
Barium, total (mg/L)	0.5101	69	-2.889	1.114	0	None	ln(x)	0.05	Inter
Beryllium, total (mg/L)	0.001084	69	-8.991	1.088	7.246	None	ln(x)	0.05	Inter
Cadmium, total (mg/L)	0.004	67	n/a	n/a	35.82	n/a	n/a	0.03217	NP Inter(normality)
Chromium, total (mg/L)	0.002274	68	-7.915	0.9181	13.24	None	ln(x)	0.05	Inter
Cobalt, total (mg/L)	0.0748	69	n/a	n/a	0	n/a	n/a	0.02904	NP Inter(normality)
Combined Radium 226 + 228 (pCi/L)	4.509	69	1.455	0.3362	0	None	sqrt(x)	0.05	Inter
Fluoride, total (mg/L)	0.583	72	n/a	n/a	38.89	n/a	n/a	0.02489	NP Inter(normality)
Lead, total (mg/L)	0.003384	69	n/a	n/a	52.17	n/a	n/a	0.02904	NP Inter(NDs)
Lithium, total (mg/L)	0.394	69	n/a	n/a	1.449	n/a	n/a	0.02904	NP Inter(normality)
Mercury, total (mg/L)	0.000033	69	n/a	n/a	59.42	n/a	n/a	0.02904	NP Inter(NDs)
Molybdenum, total (mg/L)	0.00243	68	n/a	n/a	70.59	n/a	n/a	0.03056	NP Inter(NDs)
Selenium, total (mg/L)	0.0101	69	n/a	n/a	37.68	n/a	n/a	0.02904	NP Inter(normality)
Thallium, total (mg/L)	0.001251	69	n/a	n/a	86.96	n/a	n/a	0.02904	NP Inter(NDs)

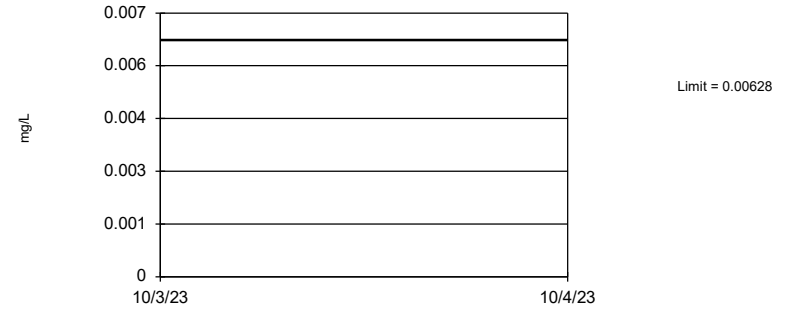
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 69 background values. 66.67% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Antimony, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

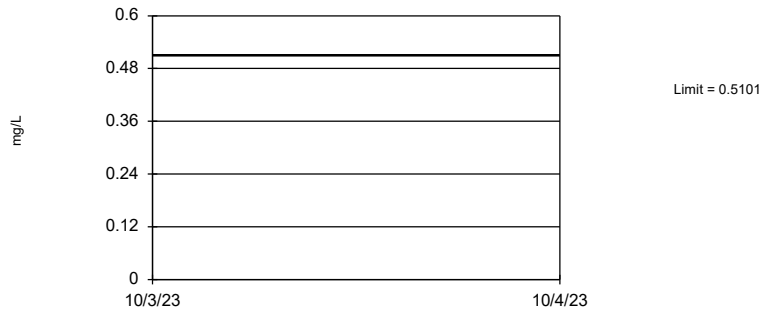
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 69 background values. 27.54% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Arsenic, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

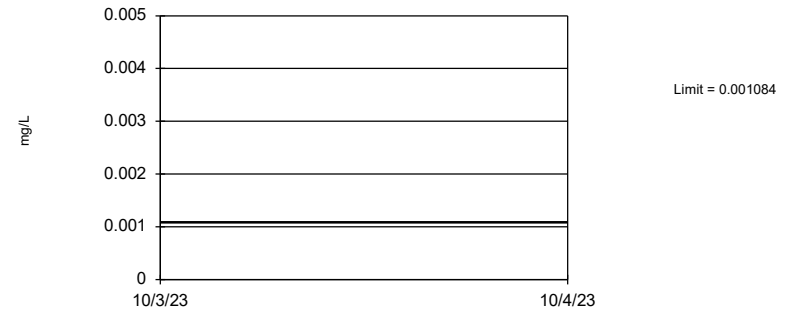
Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on natural log transformation): Mean=-2.889, Std. Dev.=1.114, n=69. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9527, critical = 0.951. Report alpha = 0.05.

Constituent: Barium, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

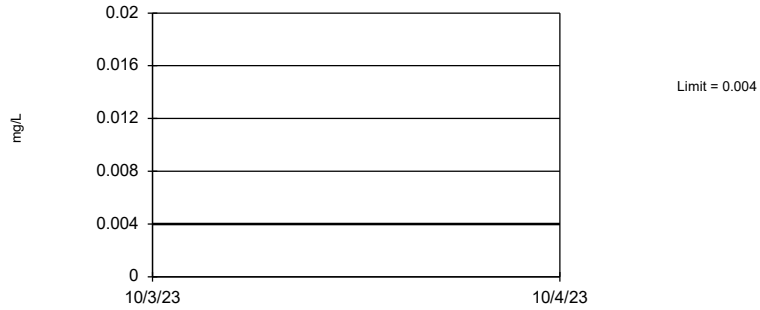
Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on natural log transformation): Mean=-8.991, Std. Dev.=1.088, n=69, 7.246% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9746, critical = 0.951. Report alpha = 0.05.

Constituent: Beryllium, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

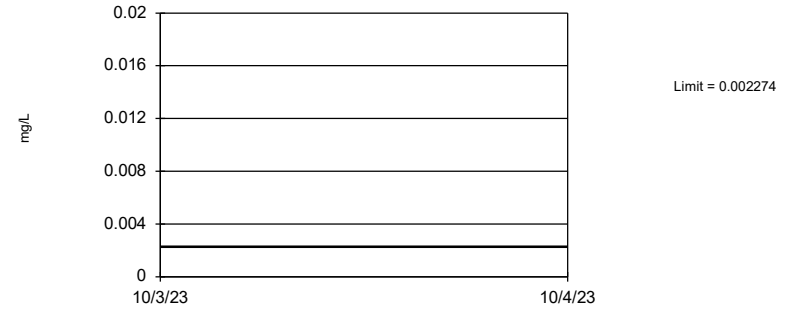
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 67 background values. 35.82% NDs. 93.16% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03217.

Constituent: Cadmium, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

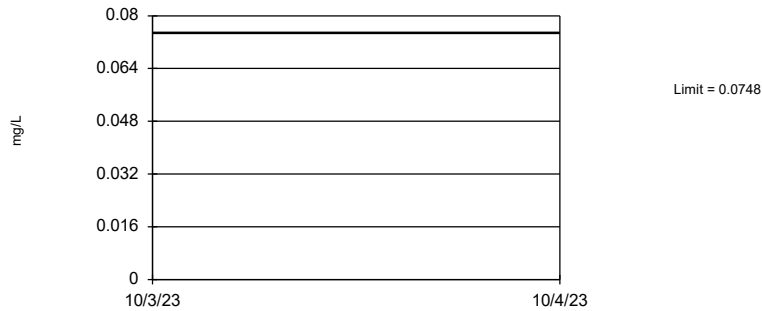
Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on natural log transformation): Mean=-7.915, Std. Dev.=0.9181, n=68, 13.24% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9648, critical = 0.95. Report alpha = 0.05.

Constituent: Chromium, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 69 background values. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Cobalt, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

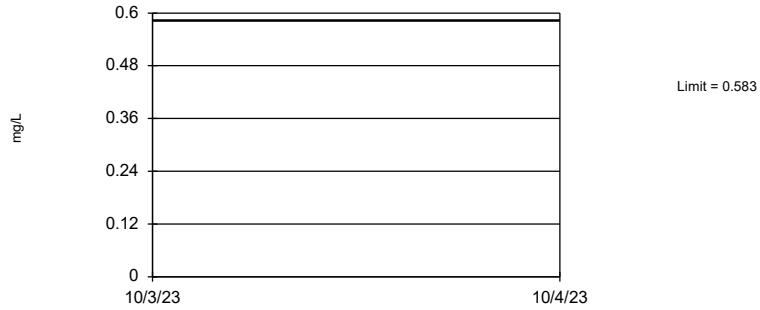
Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=1.455, Std. Dev.=0.3362, n=69. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9728, critical = 0.951. Report alpha = 0.05.

Constituent: Combined Radium 226 + 228 Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

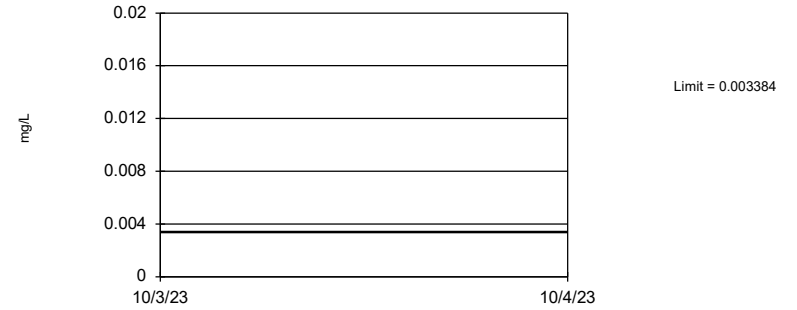
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 72 background values. 38.89% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02489.

Constituent: Fluoride, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

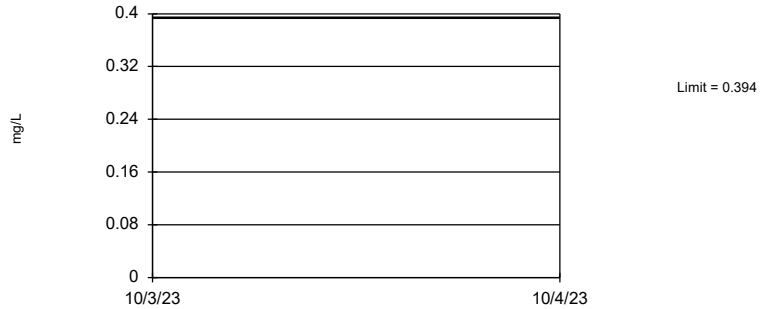
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 69 background values. 52.17% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Lead, total Analysis Run 1/4/2024 2:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

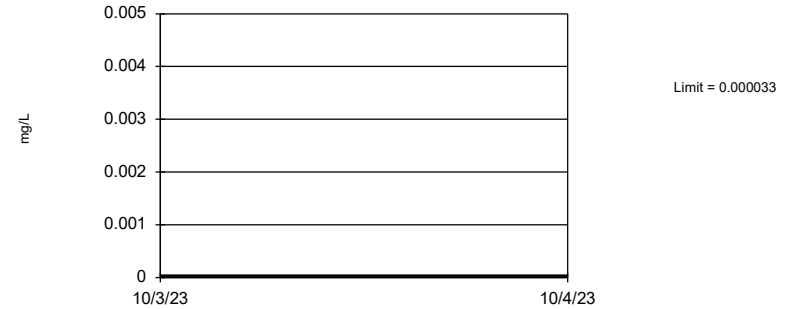
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 69 background values. 1.449% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Lithium, total Analysis Run 1/4/2024 2:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

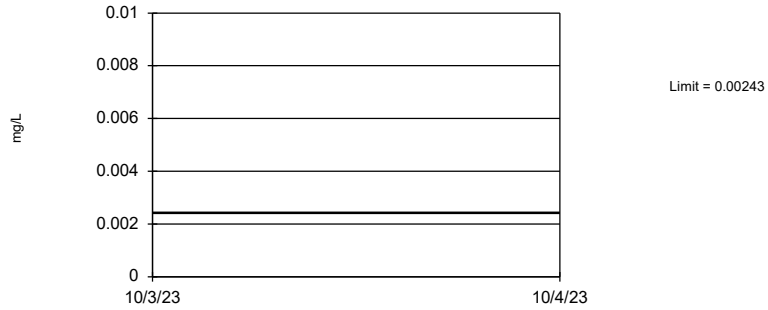
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 69 background values. 59.42% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Mercury, total Analysis Run 1/4/2024 2:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

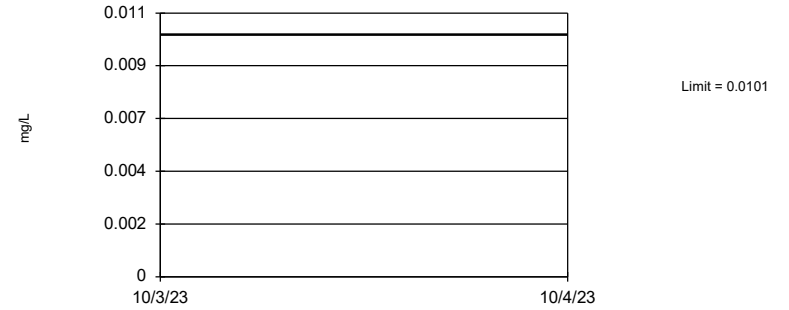
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 68 background values. 70.59% NDs. 93.55% coverage at alpha=0.01; 95.51% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.03056.

Constituent: Molybdenum, total Analysis Run 1/4/2024 2:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

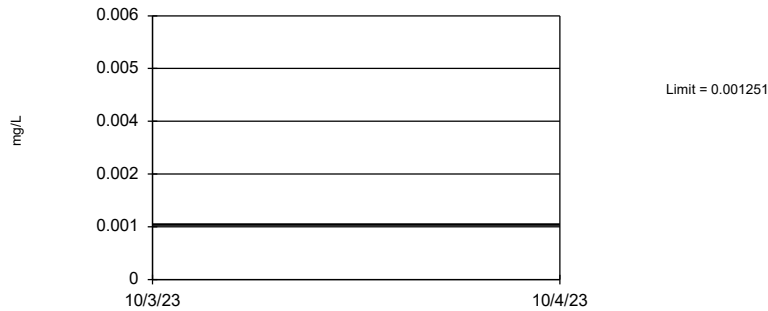
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 69 background values. 37.68% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Selenium, total Analysis Run 1/4/2024 2:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 69 background values. 86.96% NDs. 93.55% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02904.

Constituent: Thallium, total Analysis Run 1/4/2024 2:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

WELSH LANDFILL GWPS			
Constituent Name	MCL	Background Limit	GWPS
Antimony, Total (mg/L)	0.006	0.0032	0.006
Arsenic, Total (mg/L)	0.01	0.0063	0.01
Barium, Total (mg/L)	2	0.51	2
Beryllium, Total (mg/L)	0.004	0.0011	0.004
Cadmium, Total (mg/L)	0.005	0.004	0.005
Chromium, Total (mg/L)	0.1	0.0023	0.1
Cobalt, Total (mg/L)	n/a	0.075	0.075
Combined Radium, Total (pCi/L)	5	4.51	5
Fluoride, Total (mg/L)	4	0.58	4
Lead, Total (mg/L)	n/a	0.0034	0.0034
Lithium, Total (mg/L)	n/a	0.39	0.39
Mercury, Total (mg/L)	0.002	0.000033	0.002
Molybdenum, Total (mg/L)	n/a	0.0024	0.0024
Selenium, Total (mg/L)	0.05	0.01	0.05
Thallium, Total (mg/L)	0.002	0.0013	0.002

**MCL = Maximum Contaminant Level*

**GWPS = Groundwater Protection Standard*

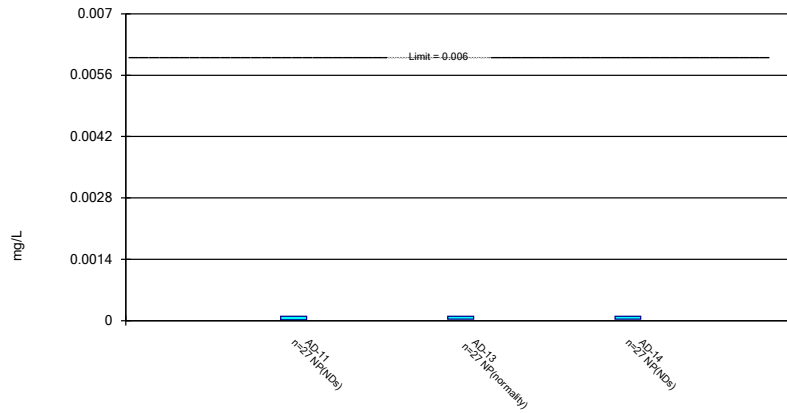
Confidence Interval Summary Table - All Results (No Significant)

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 6/10/2024, 12:20 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	AD-11	0.0001	0.000021	0.006	No	27	0.00006378	0.00003873	51.85	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	AD-13	0.0001	0.00003	0.006	No	27	0.0001211	0.0002839	48.15	None	No	0.01	NP (normality)
Antimony, total (mg/L)	AD-14	0.0001	0.00003	0.006	No	27	0.00006759	0.00003624	51.85	None	No	0.01	NP (NDs)
Arsenic, total (mg/L)	AD-11	0.0026	0.00056	0.01	No	27	0.00175	0.001828	22.22	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-13	0.003695	0.00038	0.01	No	27	0.002019	0.00216	25.93	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-14	0.001894	0.00039	0.01	No	27	0.001715	0.002015	25.93	None	No	0.01	NP (normality)
Barium, total (mg/L)	AD-11	0.0286	0.0123	2	No	27	0.02117	0.01334	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	AD-13	0.05409	0.02773	2	No	27	0.04444	0.03088	0	None	sqrt(x)	0.01	Param.
Barium, total (mg/L)	AD-14	0.04158	0.02931	2	No	27	0.03631	0.01386	0	None	sqrt(x)	0.01	Param.
Beryllium, total (mg/L)	AD-11	0.002422	0.001204	0.004	No	27	0.002051	0.001472	0	None	x^(1/3)	0.01	Param.
Beryllium, total (mg/L)	AD-13	0.0007181	0.0004587	0.004	No	27	0.0005884	0.0002719	0	None	No	0.01	Param.
Beryllium, total (mg/L)	AD-14	0.0009129	0.000458	0.004	No	27	0.0007766	0.0006132	0	None	x^(1/3)	0.01	Param.
Cadmium, total (mg/L)	AD-11	0.0003808	0.000278	0.005	No	27	0.0003294	0.0001078	0	None	No	0.01	Param.
Cadmium, total (mg/L)	AD-13	0.00019	0.00009219	0.005	No	27	0.000176	0.0001487	14.81	None	ln(x)	0.01	Param.
Cadmium, total (mg/L)	AD-14	0.001881	0.0006922	0.005	No	27	0.001522	0.001524	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	AD-11	0.00066	0.000334	0.1	No	26	0.0006779	0.0006509	0	None	No	0.01	NP (normality)
Chromium, total (mg/L)	AD-13	0.00057	0.00033	0.1	No	26	0.0005845	0.0007131	11.54	None	No	0.01	NP (normality)
Chromium, total (mg/L)	AD-14	0.0006709	0.000411	0.1	No	27	0.000541	0.0002724	7.407	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-11	0.02004	0.01351	0.075	No	27	0.01677	0.006845	0	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-13	0.00648	0.003852	0.075	No	27	0.005166	0.002755	0	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-14	0.0161	0.006931	0.075	No	27	0.01305	0.01147	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-11	2.868	1.897	5	No	27	2.463	1.138	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-13	2.774	1.938	5	No	27	2.356	0.8761	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-14	2.57	1.426	5	No	27	2.133	1.327	0	None	sqrt(x)	0.01	Param.
Fluoride, total (mg/L)	AD-11	1.089	0.4871	4	No	27	0.8848	0.6729	11.11	None	sqrt(x)	0.01	Param.
Fluoride, total (mg/L)	AD-13	0.5369	0.2855	4	No	28	0.4112	0.269	10.71	None	No	0.01	Param.
Fluoride, total (mg/L)	AD-14	0.21	0.15	4	No	28	0.2019	0.09056	39.29	None	No	0.01	NP (normality)
Lead, total (mg/L)	AD-11	0.001016	0.0004591	0.0034	No	27	0.0008991	0.000813	25.93	Kaplan-Meier	x^(1/3)	0.01	Param.
Lead, total (mg/L)	AD-13	0.0002705	0.00009009	0.0034	No	27	0.0003741	0.0005392	25.93	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	AD-14	0.0002208	0.0001172	0.0034	No	27	0.0002284	0.0001349	33.33	Kaplan-Meier	x^(1/3)	0.01	Param.
Lithium, total (mg/L)	AD-11	0.03171	0.02078	0.39	No	27	0.02625	0.01146	0	None	No	0.01	Param.
Lithium, total (mg/L)	AD-13	0.02947	0.01506	0.39	No	27	0.02226	0.0151	0	None	No	0.01	Param.
Lithium, total (mg/L)	AD-14	0.01547	0.01132	0.39	No	26	0.01339	0.00426	0	None	No	0.01	Param.
Mercury, total (mg/L)	AD-11	0.00002258	0.00000624	0.002	No	27	0.00001311	0.000007792	22.22	None	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-13	0.000006	0.000004	0.002	No	27	0.000006796	0.000006629	40.74	None	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-14	0.000332	0.00002	0.002	No	27	0.0001669	0.0001981	18.52	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	AD-11	0.001519	0.0002	0.0024	No	27	0.0005507	0.0003758	81.48	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-13	0.0008705	0.0003533	0.0024	No	27	0.0005972	0.0005772	55.56	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-14	0.0006	0.000497	0.0024	No	27	0.0005454	0.0003267	74.07	None	No	0.01	NP (NDs)
Selenium, total (mg/L)	AD-11	0.001781	0.001112	0.05	No	27	0.001446	0.0007019	14.81	None	No	0.01	Param.
Selenium, total (mg/L)	AD-13	0.0008843	0.0004669	0.05	No	27	0.0007507	0.0005102	11.11	None	x^(1/3)	0.01	Param.
Selenium, total (mg/L)	AD-14	0.002848	0.001908	0.05	No	27	0.002378	0.0009847	7.407	None	No	0.01	Param.
Thallium, total (mg/L)	AD-11	0.0002	0.00014	0.002	No	26	0.0002838	0.0003437	19.23	None	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-13	0.0002	0.00017	0.002	No	27	0.0002071	0.0001611	51.85	None	No	0.01	NP (NDs)
Thallium, total (mg/L)	AD-14	0.0001806	0.00007487	0.002	No	27	0.0002004	0.00009091	48.15	Kaplan-Meier	No	0.01	Param.

Non-Parametric Confidence Interval

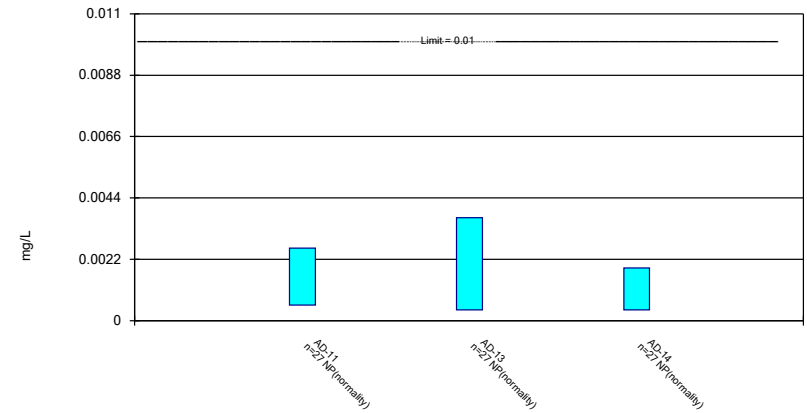
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Antimony, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

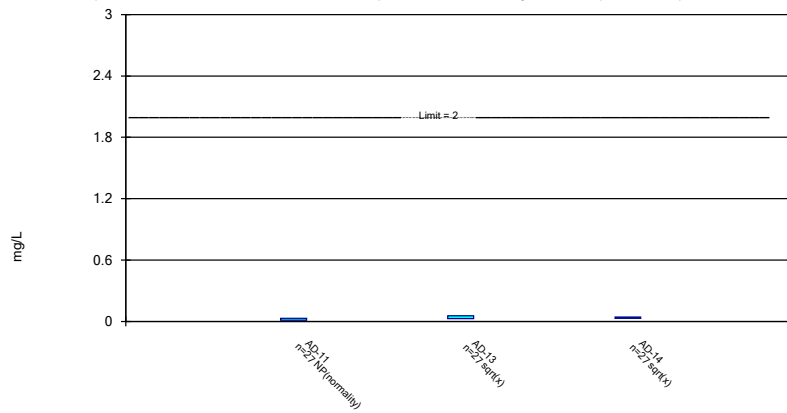
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Arsenic, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

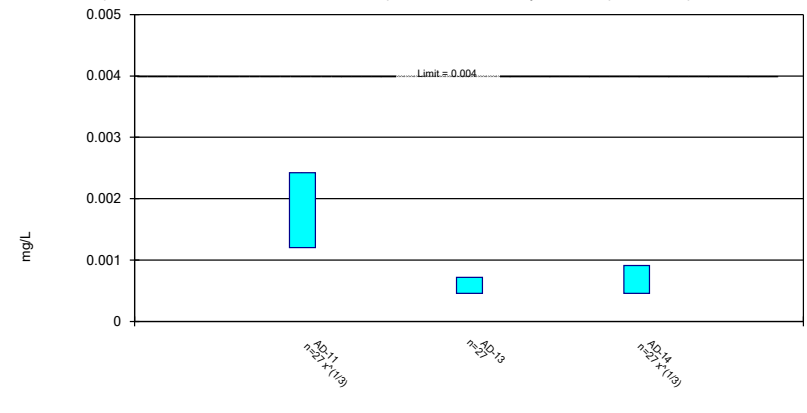
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

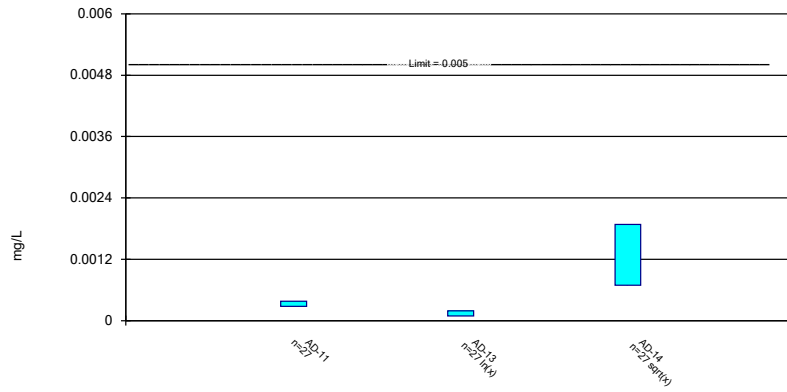
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Beryllium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

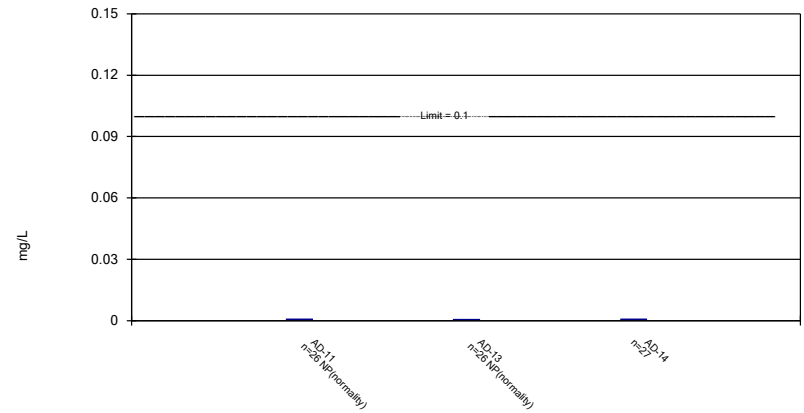
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

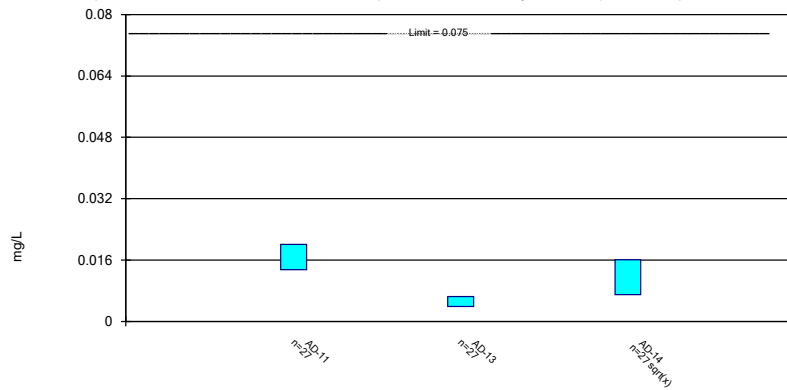
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

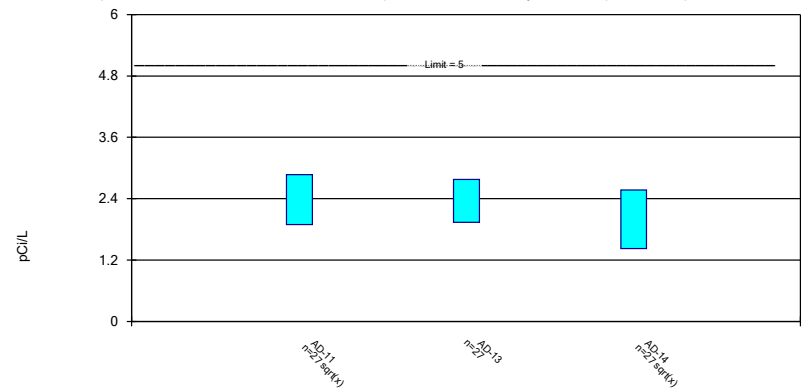
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

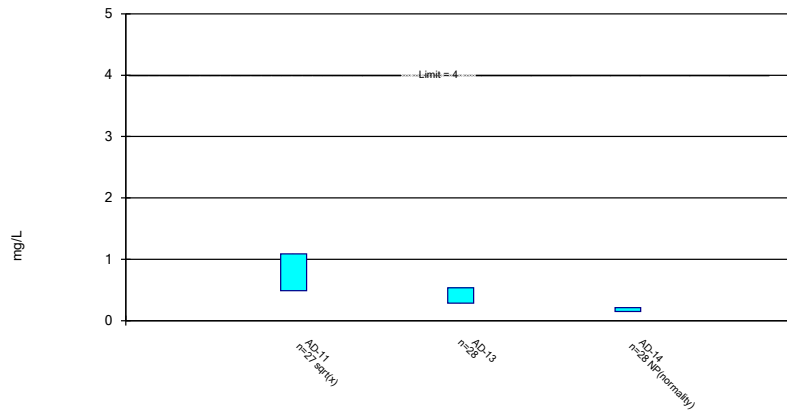
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

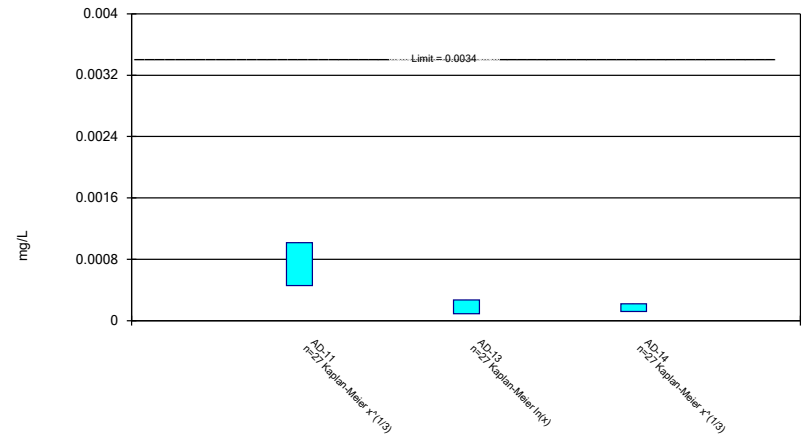
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

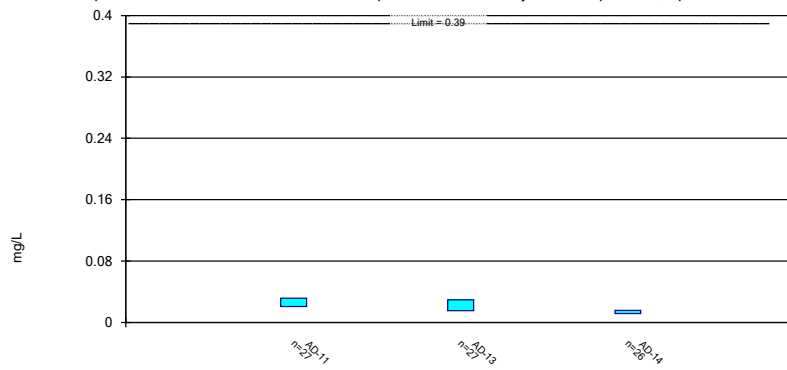
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

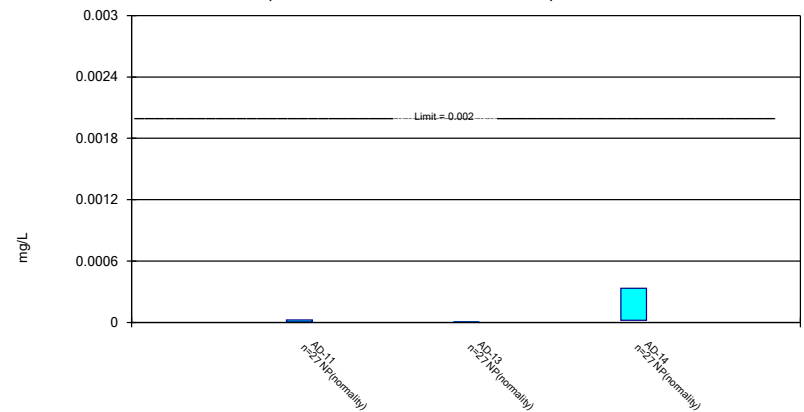
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

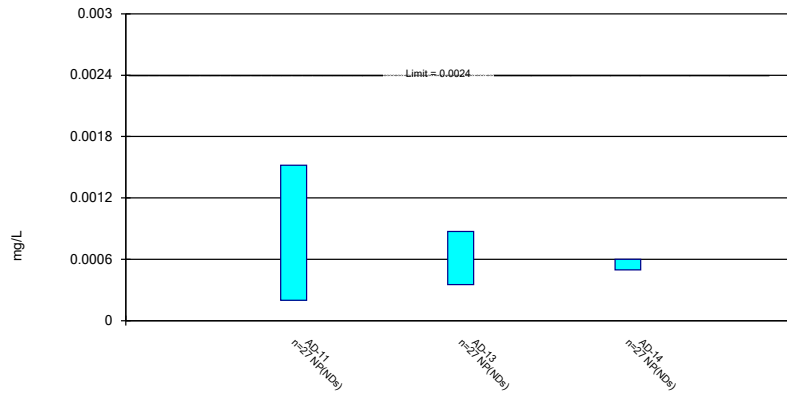
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

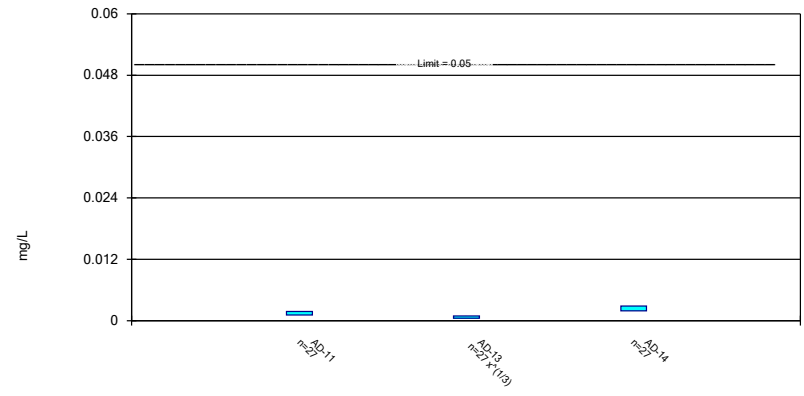
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Molybdenum, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

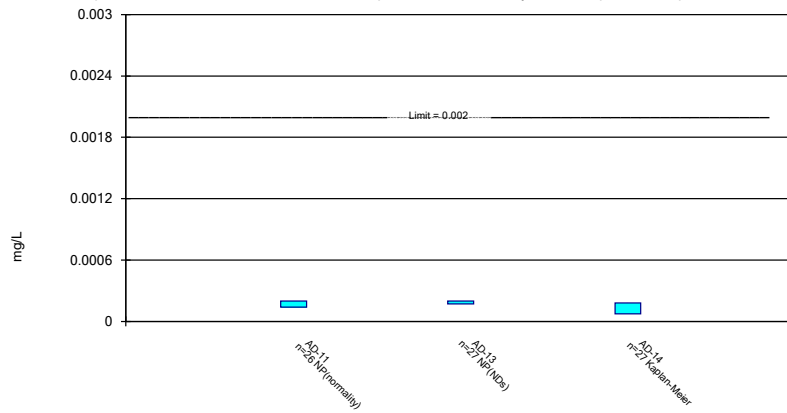
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Thallium, total Analysis Run 6/10/2024 12:14 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

STATISTICAL ANALYSIS SUMMARY, 2024 2ND SEMIANNUAL EVENT LANDFILL

**J. Robert Welsh Plant
Pittsburg, Texas**

Prepared for

American Electric Power
1 Riverside Plaza
Columbus, Ohio 43215-2372

Prepared by

Geosyntec Consultants, Inc.
500 West Wilson Bridge Road, Suite 250
Worthington, Ohio 43085

Project Number: CHA8500B

December 2024

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	1
2. LANDFILL EVALUATION.....	2
2.1 Data Validation and QA/QC	2
2.2 Statistical Analysis	2
2.2.1 Establishment of GWPSs	2
2.2.2 Evaluation of Potential Appendix IV SSLs.....	2
2.2.3 Establishment of Appendix III Prediction Limits	3
2.2.4 Evaluation of Potential Appendix III SSIs.....	4
2.3 Conclusions	4
3. REFERENCES	6

LIST OF TABLES

Table 1:	Groundwater Data Summary
Table 2:	Appendix IV Groundwater Protection Standards
Table 3:	Appendix III Data Summary

LIST OF ATTACHMENTS

Attachment A:	Certification by Qualified Professional Engineer
Attachment B:	Data Quality Review Memorandum
Attachment C:	Statistical Analysis Output

ACRONYMS AND ABBREVIATIONS

CCR	coal combustion residual
GWPS	groundwater protection standard
LPL	lower prediction limit
mg/L	milligram per liter
PQL	practical quantitation limit
QA/QC	quality assurance/quality control
SSI	statistically significant increase
SSL	statistically significant level
SU	standard units
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
UPL	upper prediction limit

1. EXECUTIVE SUMMARY

In accordance with Texas Commission on Environmental Quality (TCEQ) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, “CCR rule”), groundwater monitoring has been conducted at the Landfill, an existing CCR unit at the Welsh Power Plant in Pittsburg, Texas. Recent groundwater monitoring results were used to identify concentrations of Appendix IV constituents that are above site-specific groundwater protection standards (GWPSs).

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were identified for boron, total dissolved solids (TDS), and sulfate at the Landfill. An alternative source was not identified following the detection monitoring event, so assessment monitoring was initiated and GWPSs were set in accordance with § 352.951(b) (Geosyntec 2018). A semiannual sampling event for Appendix III parameters and Appendix IV parameters, as required by § 352.951(a), was completed in September 2024. The results of the September 2024 assessment sampling event are documented in this report.

Before the statistical analyses were conducted, the 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 that would impact data usability were identified.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. GWPSs were reestablished for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether any were present at statistically significant levels (SSLs) above the corresponding GWPS. No SSLs were identified; however, concentrations of Appendix III parameters remained above background. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

2. LANDFILL EVALUATION

2.1 Data Validation and QA/QC

During the September 2024 assessment monitoring event, one set of samples was collected for analysis from each background and compliance well. Samples from September 2024 were analyzed for all Appendix III and Appendix IV parameters. A summary of data collected from this assessment monitoring event may be found in Table 1.

Chemical analysis was completed by a National Environmental Laboratory Accreditation Program–certified analytical laboratory. The laboratory completed analysis of quality assurance and quality control (QA/QC) samples such as laboratory reagent blanks, continuing calibration verification samples, and laboratory fortified blanks.

A data quality review was completed to assess whether the data met the objectives outlined in TCEQ Draft Technical Guidance No. 32 related to groundwater sampling and analysis (TCEQ 2020). As noted in the review memorandum (Attachment B), the data were determined usable for supporting project objectives. 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.10.0.23a statistics software. The export file was checked against the analytical data for transcription errors and completeness.

2.2 Statistical Analysis

Statistical analyses for the Landfill were conducted in accordance with the December 2021 Statistical Analysis Plan (Geosyntec 2021). Time series plots and results for all completed statistical tests are provided in Attachment C. The data obtained in September 2024 were screened for potential outliers. No outliers were identified for this event.

2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with § 352.951(b) and the Statistical Analysis Plan (Geosyntec 2021). The established GWPS was set to whichever was greater of the background concentration and the maximum contaminant level for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit was calculated using data that were pooled from the background wells and collected during the background monitoring and assessment monitoring events. A tolerance limit was calculated parametrically with 95% coverage and 95% confidence for combined radium. Nonparametric tolerance limits were calculated for arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, and selenium, due to apparent nonnormal distributions, and for antimony, mercury, molybdenum, and thallium, due to a high nondetect frequency. Upper tolerance limits and the final GWPSs are summarized in Table 2.

2.2.2 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$), but nonparametric

confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the nondetect frequency was too high). An SSL was concluded if the lower confidence limit was above the GWPS (i.e., if the entire confidence interval was above the GWPS). The calculated confidence limits (Attachment C) were compared to the GWPS provided in Table 2.

No SSLs were identified at the Welsh Landfill.

2.2.3 Establishment of Appendix III Prediction Limits

Upper prediction limits (UPLs) were previously established for all Appendix III parameters following the background monitoring period (Geosyntec 2018). Intrawell tests were used to evaluate potential SSIs for calcium, chloride, sulfate, and TDS, whereas interwell tests were used to evaluate potential SSIs for boron, fluoride, and pH. Interwell and intrawell prediction limits are updated periodically during the assessment monitoring period as sufficient data become available.

Mann-Whitney (Wilcoxon rank-sum) tests were performed to determine whether the newer data are affected by a release from the Landfill. Because the interwell Appendix III limits and the Appendix IV GWPSs are based on data from upgradient wells which we would not expect to have been impacted by a release, these tests were used for intrawell Appendix III tests only. Mann-Whitney tests were used to compare the medians of historical data (May 2016 – June 2022) to the new compliance samples (October 2022 – April 2024) for calcium, chloride, sulfate, and TDS. Results were evaluated to determine if the medians of the two groups were statistically different at the 99% confidence level. Where no statistically 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, truncating historical data and using only 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 Attachment B. The datasets for all wells were updated to include both the historical and more recent results.

Prediction limits for the interwell tests were calculated using data collected through the September 2024 assessment monitoring event. New background well data were tested for outliers before being added to the background data set. Background well data were also evaluated for statistically significant trends using the Sen's Slope/Mann-Kendall trend test, and the results are included in Attachment C. The boron, fluoride, and pH prediction limits were calculated using a one-of-two retesting procedure, as during detection monitoring.

After the revised background set was established, a parametric or nonparametric analysis was selected based on the distribution of the data and the frequency of nondetect data. Estimated results under the reporting limit (i.e., practical quantitation limit [PQL]) but above the method detection limit (i.e., "J-flagged" data) were considered detections and the estimated results were used in the statistical analyses. Nonparametric analyses were selected for data sets with at least 50% nondetect data or data sets that could not be normalized. Parametric analyses were selected for data sets

(either transformed or untransformed) that passed the Shapiro-Wilk/Shapiro-Francia test for normality. The Kaplan-Meier nondetect adjustment was applied to data sets with between 15% and 50% nondetect data. For data sets with fewer than 15% nondetect data, nondetect data were replaced with one half of the PQL. The selected analysis (i.e., parametric or nonparametric) and transformation (where applicable) for each background data set are shown in Attachment C.

Interwell UPLs were updated for boron, fluoride, and pH, and lower prediction limits (LPLs) were also updated for pH using historical data through September 2024. Intrawell UPLs were updated for calcium, chloride, sulfate, and TDS using the historical data through April 2024. The updated prediction limits are summarized in Table 3. The prediction limits were calculated for a one-of-two retesting procedure: If at least one sample in a series of two is not above the UPL (or, in the case of pH, is neither less than the LPL nor greater than the UPL), then it can be concluded that an SSI has not occurred. In practice, where the initial result is not above the UPL (or, in the case of pH, is neither less than the LPL nor greater than the UPL), a second sample will not be collected. The retesting procedures allowed for an acceptably high statistical power that could detect changes at compliance wells for constituents evaluated using intrawell prediction limits.

2.2.4 Evaluation of Potential Appendix III SSIs

The Appendix III results were analyzed to assess whether concentrations of Appendix III parameters at the compliance wells were above background concentrations. Data collected during the September 2024 assessment monitoring event from each compliance well were compared to calculated prediction limits to assess whether the results were statistically above background limits. The results from this event and the prediction limits are summarized in Table 3. The following were detected above the UPLs, or, in the case of pH, below the LPLs:

- Boron concentrations were detected above the interwell UPL of 0.973 milligrams per liter (mg/L) at AD-11 (1.19 mg/L) and AD-14 (1.44 mg/L).
- Fluoride concentrations were detected above the interwell UPL of 0.583 mg/L at AD-11 (0.60 mg/L).
- pH values were below the interwell LPL of 4.8 standard units (SU) at AD-11 (3.5 SU) and at AD-14 (4.2 SU).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the September 2024 sample was above the UPL or, in the case of pH, below the LPL. Therefore, the unit will remain in assessment monitoring.

2.3 Conclusions

A semiannual assessment monitoring event was conducted in accordance with the TCEQ CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that prevented data usage. A review of outliers identified no potential outliers in the September 2024 data. GWPSs were reestablished for Appendix IV parameters. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval was above the GWPS. No SSLs were identified.

Appendix III results were compared to calculated prediction limits, with values above the UPL detected for boron and fluoride, and with results below the LPL for pH.

3. REFERENCES

Geosyntec. 2018. Statistical Analysis Summary – Landfill, J. Robert Welsh Plant, Pittsburg, Texas. Geosyntec Consultants, Inc. January.

Geosyntec. 2021. Statistical Analysis Plan – J. Robert Welsh Plant. Geosyntec Consultants, Inc. December.

TCEQ. 2020. Draft Technical Guidance No. 32. Coal Combustion Residuals Groundwater Monitoring and Corrective Action. Texas Commission on Environmental Quality. May.

TABLES

**Table 1. Groundwater Data Summary
Statistical Analysis Summary
Welsh Plant – Landfill**

Parameter	Unit	AD-1	AD-5	AD-11	AD-13		AD-14		AD-17
		Background	Background	Compliance	Compliance		Compliance		Compliance
		9/10/2024	9/10/2024	9/9/2024	9/8/2024	9/9/2024	9/9/2024	9/19/2024	9/10/2024
Antimony	µg/L	0.029 J1	0.1 U1	0.013 J1	--	0.014 J1	0.013 J1	--	0.1 U1
Arsenic	µg/L	0.19	1.26	1.02	--	1.24	0.80	--	0.35
Barium	µg/L	83.9	62.3	12.7	--	21.3	21.2	--	14.0
Beryllium	µg/L	2.2 J1	2.5 U1	2.1 J1	--	0.6 J1	2.7	--	0.035 J1
Boron	mg/L	0.973	0.039 J1	1.19	--	0.853	1.44	--	0.106
Cadmium	µg/L	0.039	0.010 J1	0.385	--	0.103	5.40	--	0.014 J1
Calcium	mg/L	7.75	33.2	11.7	--	6.66	13.8	--	172
Chloride	mg/L	3.98	22.5	10.2	--	8.44	8.87	--	38.4
Chromium	µg/L	0.44	0.31	0.43	--	0.50	0.66	--	0.31
Cobalt	µg/L	4.72	10.1	18.0	--	5.28	40.9	--	42.6
Combined Radium	pCi/L	4.7	2.1	6.37	--	3.55	8.51	--	5.99
Fluoride	mg/L	0.43	0.16	0.60	--	0.13	0.32	--	0.15 U1
Lead	µg/L	0.21	0.07 J1	1.51	--	0.50	0.68	--	0.06 J1
Lithium	mg/L	0.011 J1	0.152	0.034	--	0.054	0.028	--	0.254
Mercury	µg/L	0.002 J1	0.005 U1	0.006	--	0.005 U1	--	0.500	0.003 J1
Molybdenum	µg/L	0.5 U1	0.5 U1	0.5 U1	--	0.2 J1	0.5 U1	--	0.5 U1
Selenium	µg/L	11.3	0.06 J1	2.51	--	0.45 J1	3.46	--	0.5 U1
Sulfate	mg/L	126	114	486	--	154	337	--	1,110
Thallium	µg/L	0.06 J1	0.2 U1	0.20	--	0.14 J1	0.39	--	0.2 U1
Total Dissolved Solids	mg/L	260	310	770	--	310	580	--	1,580 S7
pH	SU	5.7	6.3	3.5	5.3	--	4.2	--	5.4

Notes:

--: not analyzed

J1: estimated value. Parameter was detected in concentrations below the reporting limit.

mg/L: milligrams per liter

pCi/L: picocuries per liter

S7: sample did not achieve constant weight.

SU: standard unit

U1: non-detect value. For statistical analysis, parameters that were not detected were replaced with the reporting limit.

µg/L: micrograms per liter

**Table 2. Appendix IV Groundwater Protection Standards
Statistical Analysis Summary
Welsh Plant – Landfill**

Constituent Name	MCL	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.00600	0.00317	0.00600
Arsenic, Total (mg/L)	0.0100	0.00628	0.0100
Barium, Total (mg/L)	2.00	0.512	2.00
Beryllium, Total (mg/L)	0.00400	0.00220	0.00400
Cadmium, Total (mg/L)	0.00500	0.00400	0.00500
Chromium, Total (mg/L)	0.100	0.00500	0.100
Cobalt, Total (mg/L)	n/a	0.0748	0.0748
Combined Radium, Total (pCi/L)	5.00	4.72	5.00
Fluoride, Total (mg/L)	4.00	0.583	4.00
Lead, Total (mg/L)	n/a	0.00110	0.00110
Lithium, Total (mg/L)	n/a	0.394	0.394
Mercury, Total (mg/L)	0.00200	0.0000330	0.00200
Molybdenum, Total (mg/L)	n/a	0.00243	0.00243
Selenium, Total (mg/L)	0.0500	0.01130	0.0500
Thallium, Total (mg/L)	0.00200	0.00125	0.00200

Notes:

1. Calculated UTL (upper tolerance limit) represents site-specific background values.
2. Grey cells indicate the GWPS is based on the calculated UTL. Either the UTL is higher than the MCL or an MCL does not exist.

GWPS: groundwater protection standard

MCL: maximum contaminant level

mg/L: milligrams per liter

n/a: not applicable

pCi/L: picocuries per liter

**Table 3. Appendix III Data Summary
Statistical Analysis Summary
Welsh – Landfill**

Analyte	Unit	Description	AD-11	AD-13*	AD-14
			9/9/2024	9/9/2024	9/9/2024
Boron	mg/L	Interwell Background Value (UPL)	0.973		
		Analytical Result	1.19	0.853	1.44
Calcium	mg/L	Intrawell Background Value (UPL)	22.0	33.9	25.6
		Analytical Result	11.7	6.66	13.8
Chloride	mg/L	Intrawell Background Value (UPL)	13.2	19.8	11.9
		Analytical Result	10.2	8.44	8.87
Fluoride	mg/L	Interwell Background Value (UPL)	0.583		
		Analytical Result	0.60	0.13	0.32
pH	SU	Interwell Background Value (UPL)	6.9		
		Interwell Background Value (LPL)	4.8		
		Analytical Result	3.5	5.3	4.2
Sulfate	mg/L	Intrawell Background Value (UPL)	712	338	404
		Analytical Result	486	154	337
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	1094	615	591
		Analytical Result	770	310	580

Notes:

1. Bold values exceed the background value.

2. Background values are shaded gray.

*: pH measured on 9/9/2024. Well purged dry and sampled the following day.

LPL: lower prediction limit

mg/L: milligrams per liter

SU: standard units

UPL: upper prediction limit

ATTACHMENT A

Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Welsh Landfill CCR management area and that the requirements of § 352.951(a) have been met.

David Anthony Miller

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature



112498

License Number

Texas

Licensing State

12.20.2024

Date

ATTACHMENT B

Data Quality Review Memorandum

Memorandum

Date: December 18, 2024
To: David Miller (AEP)
Copies to: Pryce Warren (AEP)
From: Allison Kreinberg (Geosyntec)
Subject: Data Quality Review – Welsh Power Plant
September 2024 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Welsh Power Plant, located in Pittsburg, Texas in September 2024. The groundwater samples were collected to comply with the Texas Commission on Environmental Quality’s (TCEQ’s) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, “CCR Rule”). 40 CFR 257 Appendix III and IV constituents were analyzed.

The following sample data groups (SDGs) were associated with the groundwater samples collected during the September 2024 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242750
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242752
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242753
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242776
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242778
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242779
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 242843

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32¹ prior to submittal of this data to TCEQ.

¹ TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

The following data quality issues were identified:

- As reported in SDG 242776, the AD-14 sample bottle collected on 9/9/2024 for mercury was broken during transport and could not be analyzed. AD-14 was resampled on 9/19/2024, and the mercury result was reported in SDG 242843.
- As reported in SDG 242776, cobalt and chromium were detected in the equipment blank sample “Equipment Blank - Landfill” collected on 9/9/2024. The detected chromium concentration in the equipment blank (0.32 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 242776, calcium and chromium were detected in the field blank sample “Field Blank - Landfill” collected on 9/9/2024. The detected chromium concentration in the equipment blank (0.30 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 242778, chromium was detected in the equipment blank sample “Equipment Blank - Background” collected on 9/10/2024. The estimated detected chromium concentration in the equipment blank (0.29 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 242778, chromium was detected in the field blank sample “Field Blank - Background” collected on 9/10/2024. The estimated detected chromium concentration in the field blank (0.25 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 242779, chromium, cobalt, and lithium were detected in the equipment blank sample “Equipment Blank - PBAP” collected on 9/9/2024. The estimated detected chromium concentration in the equipment blank (0.25 µg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.
- As reported in SDG 242779, chromium and lithium were detected in the field blank sample “Field Blank - PBAP” collected on 9/9/2024. The estimated detected chromium concentration in the field blank (0.28 µg/L) was more than 10% of the detected values for

chromium in all groundwater samples, which could result in high bias for all groundwater chromium results.

- As reported in SDG 242753, the relative percent difference (RPD) for total dissolved solids (TDS) concentrations from parent sample “AD-9” and duplicate sample “DUPLICATE - PBAP” was 29%. The RPD for chloride concentrations from AD-9 and “DUPLICATE - PBAP” was 28%. The RPD for sulfate concentrations from AD-9 and “DUPLICATE - PBAP” was 43%. The AD-9 TDS, chloride, and sulfate results should be considered estimated.
- As reported in SDG 242776, the RPD for chromium concentrations from parent sample “AD-11” and duplicate sample “Duplicate” was 38%. The AD-11 chromium result should be considered estimated.
- As reported in SDG 242779, the RPD for antimony concentrations from parent sample “AD-9” and duplicate sample “Duplicate - PBAP” was 67%. The AD-9 antimony results should be considered estimated.
- The recovery of radium-226 on laboratory control spike duplicate (LCSD) sample “PB24092301” (65%) was below the acceptable limit of 75%. Samples associated with that QC batch on SDG 242779 were flagged L1: the associated LCS or LCS duplicate (LCSD) recovery was outside acceptance limits. The RPD of radium-226 on LCSD sample “PB24092301” (42.2%) was above the acceptable limit of 25%. Samples associated with that QC batch on 242779 were flagged P2: the precision on the LCSD was above acceptance limits. The associated results should be considered estimated.
- As reported in SDG 242779, the AD-9 and AD-15 samples collected on 9/9/2024 for radium-226 were flagged O2: insufficient sample was received to perform the MS and duplicate analyses with this sample batch. The associated results should be considered estimated.
- As reported in SDG 242752, the AD-17 sample collected on 9/10/2024 for TDS was flagged S7: sample did not achieve constant weight. The AD-17 TDS result should be considered estimated.

Based on these findings, the majority of the data reported in these SDGs are considered accurate and complete. Although the QC failures mentioned above will result in some limitations of data use since the affected results are considered estimated or have elevated reporting limits, the data are considered usable for supporting project objectives.

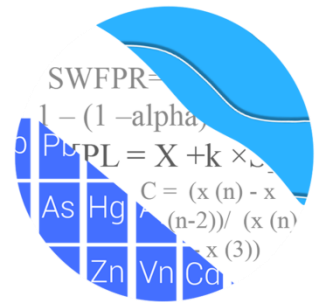
ATTACHMENT C

Statistical Analysis Output

GROUNDWATER STATS CONSULTING

December 13, 2024

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
500 W. Wilson Bridge Road, Suite 250
Worthington, OH 43085



Re: Welsh Landfill - Assessment Monitoring Event & Background Update 2024

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis and background update of 2024 groundwater data for American Electric Power Inc.'s Welsh Landfill. The analysis complies with the Texas Commission of Environmental Quality Rule 30 TAC 352 as well as with the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the Coal Combustion Residuals (CCR) program in 2016. Below is a list of the monitoring wells, as provided by Geosyntec Consultants. Note that originally the network included upgradient well AD-18; however, further research, reportedly, identified that this well was not providing adequate representation of the groundwater quality upgradient of this site and exhibited different chemical properties from the neighboring upgradient wells. Therefore, data from this well are no longer included in the statistical analysis.

- **Upgradient wells:** AD-1, AD-5, and AD-17
- **Downgradient wells:** AD-11, AD-13, and AD-14

Data were sent electronically, and the statistical analysis was reviewed by Dr. Jim Loftis, Civil & Environmental Engineering professor emeritus at Colorado State University and Senior Advisor to Groundwater Stats Consulting. The analysis was conducted according to the Statistical Analysis Plan prepared by GSC and approved by Dr. Kirk Cameron with MacStat Consulting.

The CCR program consists of the following constituents:

- **Appendix III** (Detection Monitoring) - boron, calcium, chloride, fluoride, pH, sulfate, and TDS
- **Appendix IV** (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

Time series plots for Appendix III and IV parameters are provided for all wells and constituents, and are used to evaluate concentrations over the entire record (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. Values flagged as outliers may be seen on the Outlier Summary following this letter (Figure C). These values are plotted in a lighter font and disconnected symbol on the time series graphs.

Due to varying detection limits in background data sets, a substitution of the most recent reporting limit is used for all non-detects. Note that for calculation of intrawell prediction limits, substitution of the most recent reporting limit is performed separately for each well/parameter pair. In some cases, the reporting limit provided by the laboratory contains varying limits for a given parameter; therefore, the substitution may differ from well to well. Reporting limit changes may vary based on laboratory capabilities. For fluoride, lead, and selenium, historical reporting limits were updated to the most recent limits of 0.15 mg/L, 0.0002 mg/L, and 0.0005 mg/L, respectively, and applied across all non-detects for all wells.

Summary of Statistical Methods

- 1) Intrawell prediction limits, combined with a 1-of-2 resample plan for calcium, chloride, sulfate, and TDS
- 2) Interwell prediction limits combined with a 1-of-2 resample plan for boron, fluoride, and pH

In the event of an initial exceedance of compliance well data, the 1-of-2 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., impact from the site, natural variation, or an off-site source). If the

resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. Parametric limits are based on a significance level of 0.05 for each semi-annual event. When data cannot be normalized or the majority of data are non-detects, a nonparametric test is utilized. The significance level of a nonparametric test depends on the background sample size. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. 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 as appropriate. Non-detects are handled as follows:

- No statistical analyses are required on wells and analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% non-detects, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the most recent practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, the Kaplan-Meier non-detect 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% non-detects.

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 interwell case, newer data may be included in background during each sample event after screening the upgradient well data for any new outliers. Data will also be periodically evaluated for statistically significant trends, and earlier data may be deselected prior to construction of statistical limits so that limits represent present-day conditions.

In the intrawell case, data for all wells and constituents are 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, as well, the earlier portion of data are deselected prior to construction of limits in order 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.

Selection of Statistical Methods for Appendix III - Conducted in December 2017

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; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameter.

As a result of the screening, intrawell prediction limits were determined to be most appropriate for calcium, chloride, sulfate, and TDS while interwell prediction limits were appropriate for boron, fluoride, and pH. A summary of those findings was included with the report.

Appendix III Background Update Summary – Conducted in November 2024

Outlier Analysis

Prior to updating interwell prediction limits for the Fall 2024 analysis, data were evaluated using Tukey's outlier test and visual screening on pooled upgradient well data through September 2024 for boron, fluoride, and pH. Results of the outlier tests follow this report (Figure C). Tukey's outlier test on pooled upgradient well data did not identify any outliers for boron, fluoride, and pH among upgradient wells; therefore, no measurements were flagged as outliers.

For parameters which use intrawell prediction limits (calcium, chloride, sulfate, and TDS), data through April 2024 were evaluated using Tukey's outlier test and visual screening on all wells to evaluate potential new outliers as well as existing outliers. All previously flagged values were confirmed with Tukey's test and visual screening. No additional values were flagged as outliers for Appendix III parameters Any values identified by Tukey's test, but not flagged in the database, appeared to be representative of natural variation or

would not greatly reduce variation within the record. A list of all flagged values follows this report (Figure C).

Intrawell – Mann-Whitney Test

In the current update, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through June 2022 to the new compliance samples at each well through April 2024 for all parameters which use intrawell prediction limits (calcium, chloride, sulfate, and TDS) 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). Statistically significant differences (either an increase or decrease) were identified for the following well/constituent pairs:

Increase:

- Sulfate: AD-1 (upgradient)

Decrease:

- Calcium: AD-17 (upgradient)

Although statistically significant differences were identified for these three well/constituent pairs, records were updated through April 2024. The significant cases are for upgradient wells, and the newer data are needed to best characterize current upgradient groundwater quality. All records for well/constituent pairs evaluated with intrawell prediction limits were updated through April 2024.

Intrawell – Prediction Limits

Intrawell prediction limits, combined with a 1-of-2 resample plan, are constructed using historical data through April 2024 for calcium, chloride, sulfate, and TDS. A summary of the limits follows this letter (Figure E). No comparisons of the September 2024 observations were performed in this analysis.

Interwell – Trend Test Evaluation

For parameters which are tested using interwell prediction limits (boron, fluoride, and pH), the Sen's Slope/Mann-Kendall trend test was used to evaluate data in upgradient wells and determine whether concentrations are statistically increasing, decreasing or stable at the 99% confidence level (Figure F). Statistically significant trends were identified for the following well/constituent pairs:

Increasing

- Boron: AD-1 (upgradient)
- Fluoride: AD-1 (upgradient)

Decreasing

- Fluoride: AD-17 (upgradient)
- pH: AD-17 (upgradient)

While identifying these upgradient trends is useful for understanding and characterization of upgradient background groundwater quality, truncation of the records to remove the trend is appropriate when resulting statistical limits are not representative of upgradient groundwater quality. No adjustments were required for these well/constituent pairs at this time, and all data from upgradient wells were used to construct interwell prediction limits for boron, fluoride, and pH.

Interwell – Prediction Limits

Interwell prediction limits, combined with a 1-of-2 resample plan, were updated using all available data from upgradient wells through September 2024 for boron, fluoride, and pH (Figure G). Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent. A summary table of the updated limits may be found following this letter in the Prediction Limit Summary Tables. No comparison of the September 2024 compliance observations was performed in this analysis.

Evaluation of Appendix IV Parameters – September 2024

Outlier Analysis

Prior to evaluating Appendix IV parameters, upgradient well data are screened through both visual screening and Tukey's outlier test for potential outliers and extreme trending patterns that would lead to artificially elevated statistical limits. All flagged values may be seen on the Outlier Summary following this letter (Figure C), and previously flagged outliers were confirmed for Appendix IV parameters, including the highest value of chromium in well AD-17. As mentioned above, for fluoride, lead, and selenium, historical reporting limits were substituted with the most recent reporting limits of 0.15 mg/L, 0.0002 mg/L, and 0.0005 mg/L, respectively, and applied across all non-detects for all wells.

For the current analysis, Tukey's outlier test on pooled upgradient well data through September 2024 identified outliers for chromium and lead. The highest values for lead in upgradient wells AD-1 and AD-17 were flagged as outliers since the measurements were

not consistent with remaining measurements within each respective well and when compared to pooled upgradient concentrations. All other observations identified by Tukey's test were either similar to concentrations among neighboring upgradient wells or were lower than the respective Maximum Contaminant Level (MCL); therefore, those values were not flagged as outliers.

Additionally, downgradient well data through September 2024 were screened through visual screening using time series graphs. Since the downgradient well data are used to construct confidence intervals, a regulatory conservative approach is taken in that values that are marginally high relative to the rest of the data are retained unless there is particular justification for excluding the data. During this analysis, the highest concentrations for chromium at wells AD-11 and AD-13 were unflagged as the measurements are at least two orders of magnitude lower than the MCL and data have stabilized at these respective well/constituent pairs. Additionally, a once elevated observation for lithium at AD-14 was unflagged since more recent observations for this well/constituent pair are of similar magnitude. Previously flagged measurements in downgradient well AD-11 for fluoride and thallium remain flagged as these measurements are not consistent with remaining measurements within this well. No additional outliers among downgradient wells for Appendix IV parameters were flagged during this analysis. All flagged values may be seen on the Outlier Summary following this letter (Figure C).

Trend Analysis – Upgradient Wells

Data were also screened using time series plots for extreme trending patterns among upgradient wells that would lead to artificially elevated statistical limits; however, reported measurements in upgradient wells appear stable over time or contained low-level detections which did not exceed the established Maximum Contaminant Limits (MCLs)—as is the case for the increasing trend in selenium at well AD-1. Among constituents that do not have MCLs, the time series plots for cobalt in upgradient well AD-17 and lithium in upgradient wells AD-5 and AD-17 indicated decreasing concentrations; therefore, the Sen's Slope/Mann-Kendall trend test was used to formally evaluate whether statistically significant trends are present at the 95% confidence level (Figure H). The following statistically significant trends were identified among upgradient wells:

Increasing

- None

Decreasing

- Cobalt: AD-17
- Lithium: AD-5 and AD-17

Although statistically significant decreasing trends were identified, earlier portions of the record were highly variable and include observations similar to those recorded recently. While these records were not truncated during this analysis, all data will be re-evaluated during the next background update to determine whether more recent measurements remain stable at lower concentrations.

Interwell Upper Tolerance Limits

Upper tolerance limits were used to calculate background limits from pooled upgradient well data through September 2024 for Appendix IV parameters (Figure I). These limits are updated on an annual basis and will be updated again during the Fall 2025 sample event.

Parametric tolerance limits are calculated, with a target of 95% confidence and 95% coverage, when data follow a normal or transformed-normal distribution. When data contained greater than 50% non-detects or did not follow a normal or transformed-normal distribution, non-parametric tolerance limits were constructed using the highest background measurement. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples.

Groundwater Protection Standards

These background limits were compared to the Maximum Contaminant Levels (MCLs) as shown in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the confidence interval comparisons (Figure J).

Confidence Intervals

Confidence intervals were then constructed using data through September 2024 on downgradient wells for each of the Appendix IV parameters and compared to the GWPS, (i.e., the highest limit of the MCL or background limit as discussed above). Confidence intervals were constructed as either parametric or nonparametric confidence intervals depending on the data distribution and percentage of non-detects. When data followed a normal or transformed-normal distribution, parametric confidence intervals were used for Appendix IV parameters. Nonparametric confidence intervals were constructed when data did not follow a normal or transformed-normal distribution or when there were greater than 50% non-detects. The lower confidence limit, which is constructed with 99% confidence for parametric confidence intervals, is compared to the GWPS prepared as described above. The confidence level associated with nonparametric confidence intervals is dependent upon the number samples available.

Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. Complete graphical results of the confidence intervals follow this letter (Figure K). No statistical exceedances were identified.

Trend Test Evaluation – Appendix IV

When confidence interval exceedances are identified in downgradient wells, data are further evaluated using the Sen's Slope/Mann Kendall trend test to determine whether concentrations are statistically increasing, decreasing, or stable at the 95% confidence level. Utilizing the 95% confidence level for trend tests readily identifies significant trends and is more sensitive than the 99% confidence level without drastically increasing the false negative rate. Upgradient wells are included in the trend analyses for all parameters found to exceed their confidence interval in downgradient wells. When similar patterns exist upgradient of the site, it is an indication of variability in groundwater which may be unrelated to practices at the site. Since no confidence interval exceedances were identified, trend tests were not required.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Welsh Landfill. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,



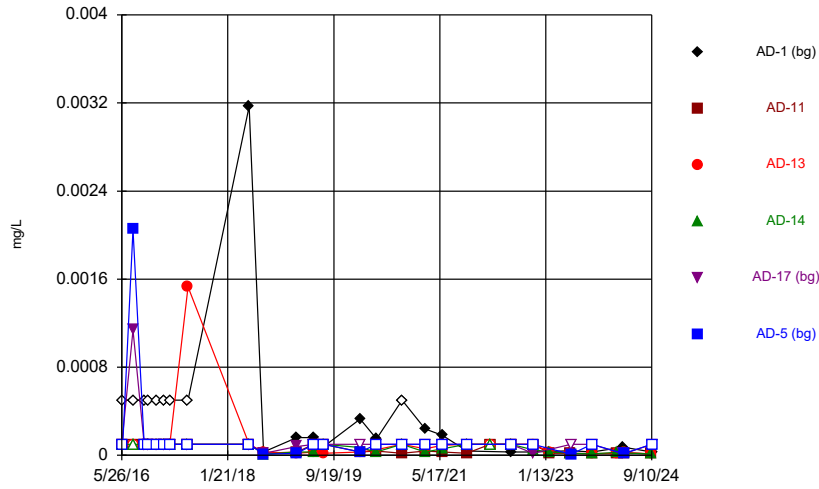
Andrew Collins
Project Manager



Kristina Rayner
Senior Statistician

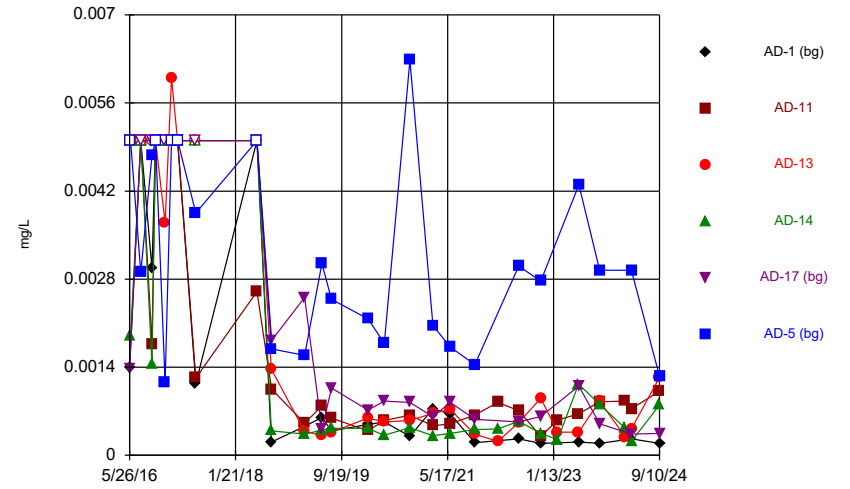
FIGURE A
Time Series

Time Series



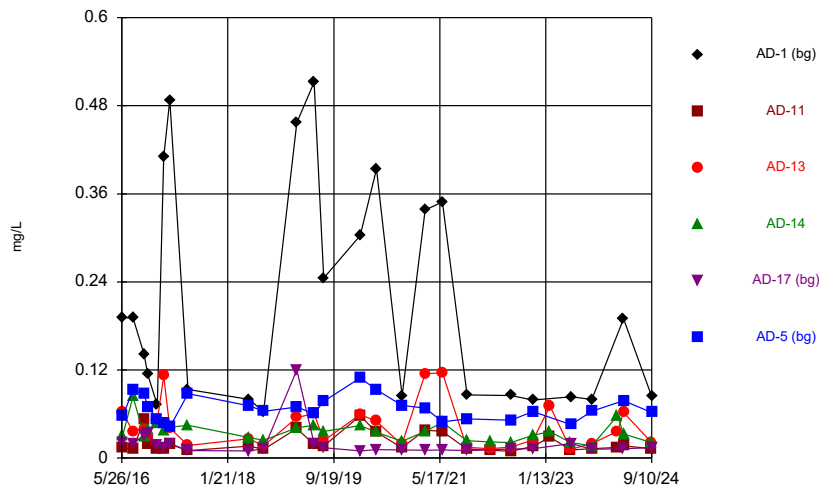
Constituent: Antimony, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



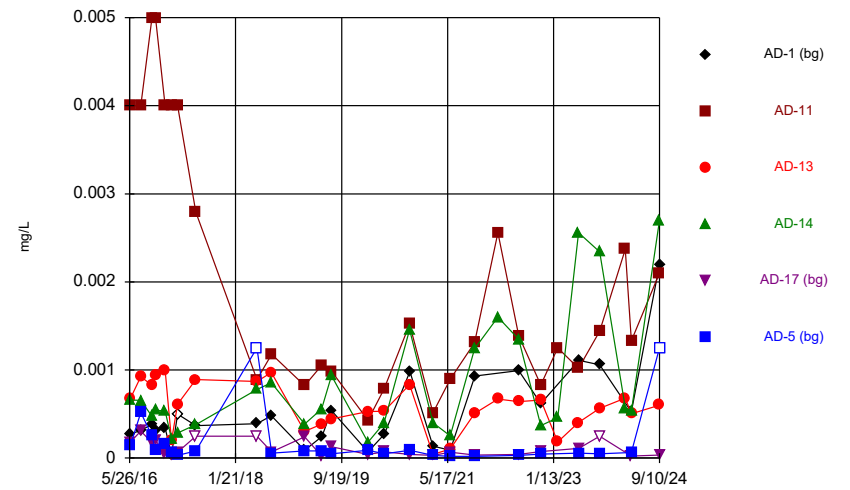
Constituent: Arsenic, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



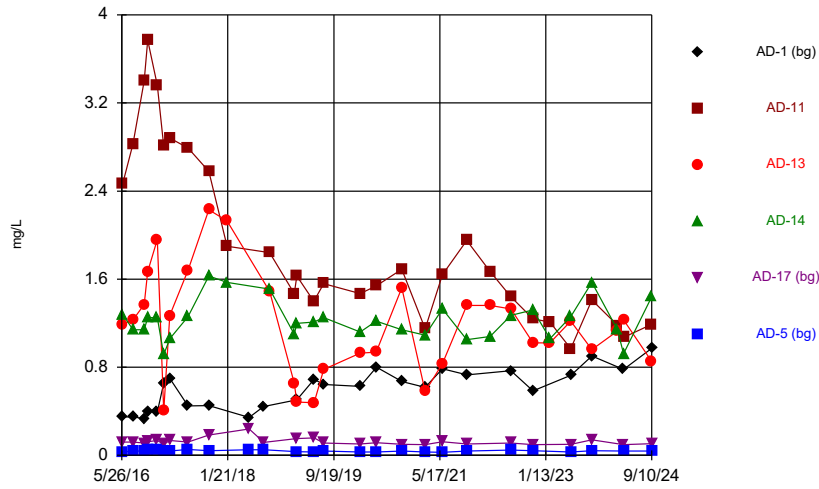
Constituent: Barium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



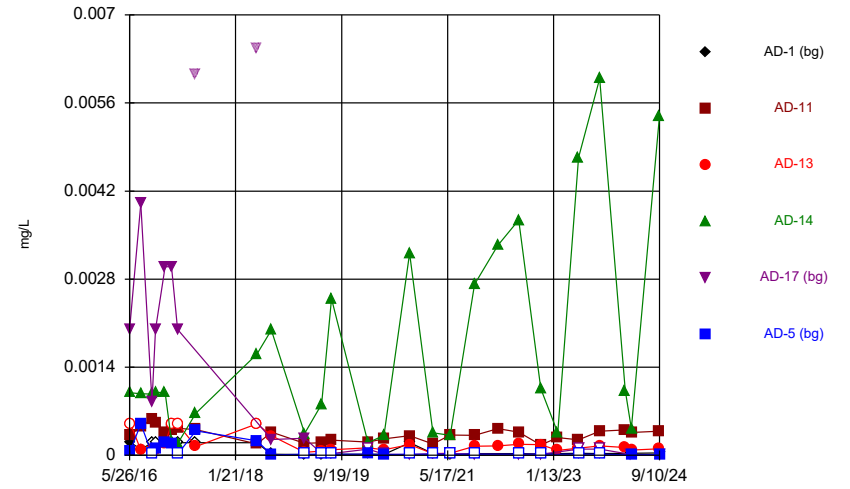
Constituent: Beryllium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



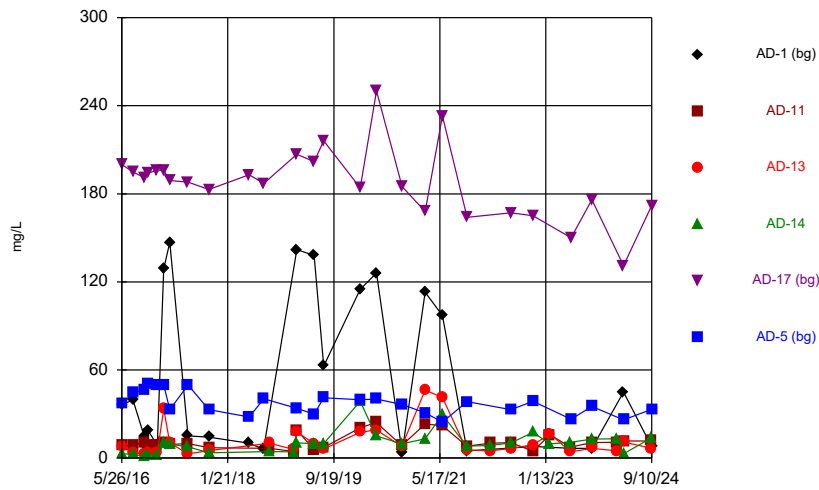
Constituent: Boron, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



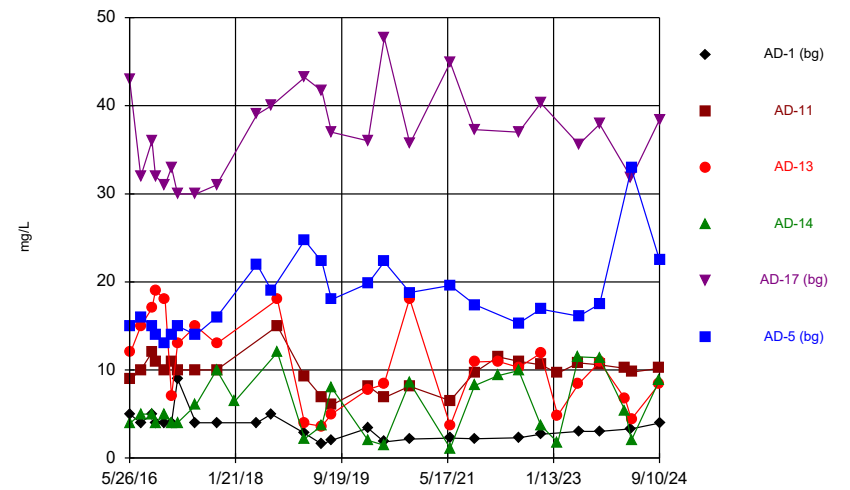
Constituent: Cadmium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



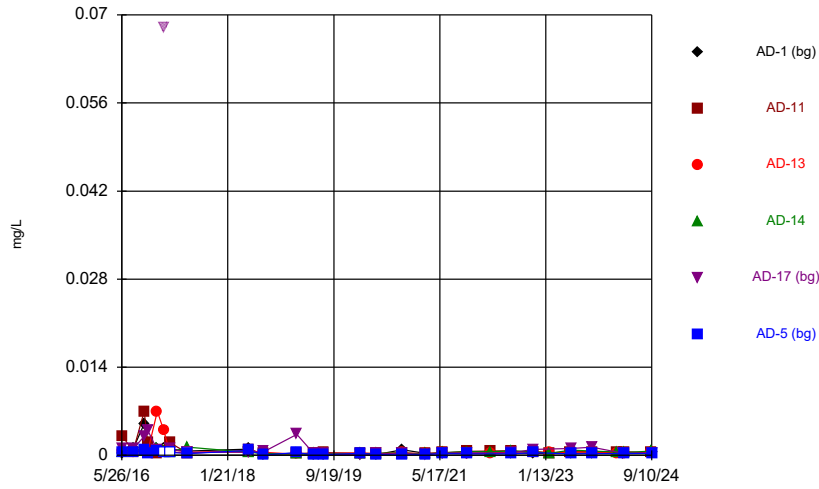
Constituent: Calcium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



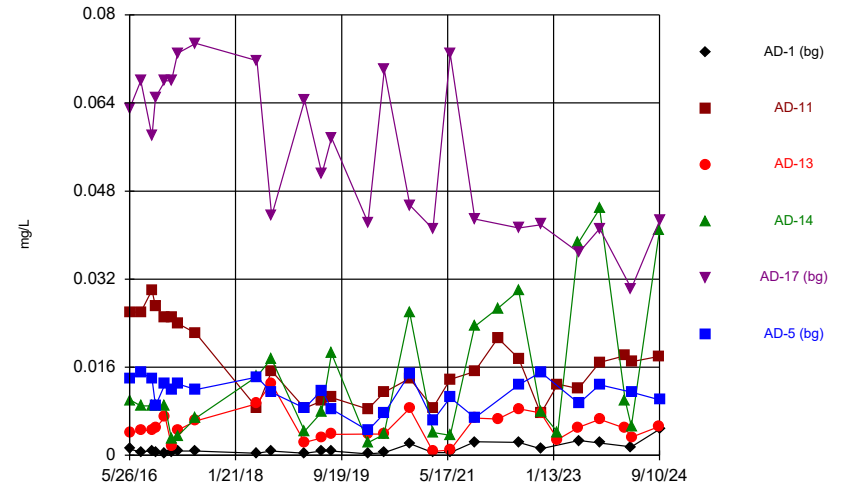
Constituent: Chloride, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



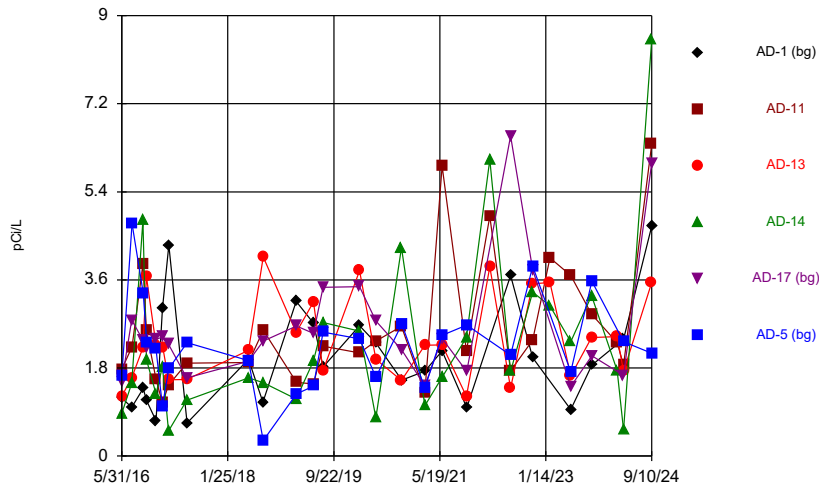
Constituent: Chromium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



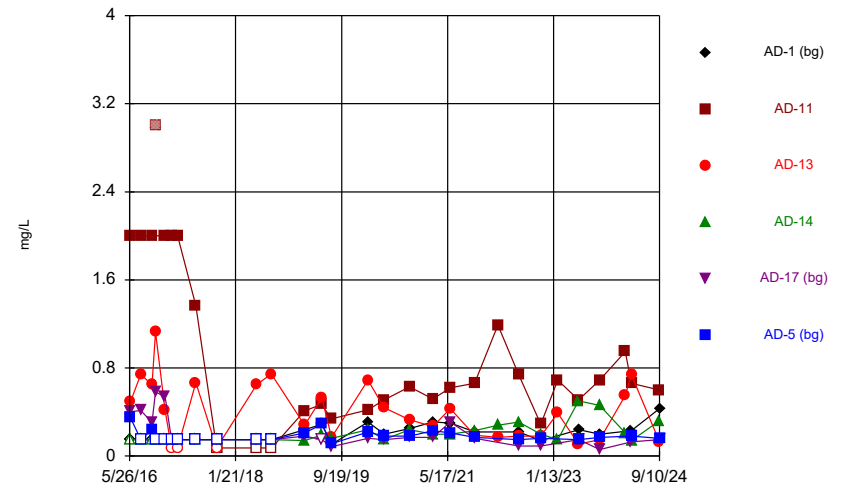
Constituent: Cobalt, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



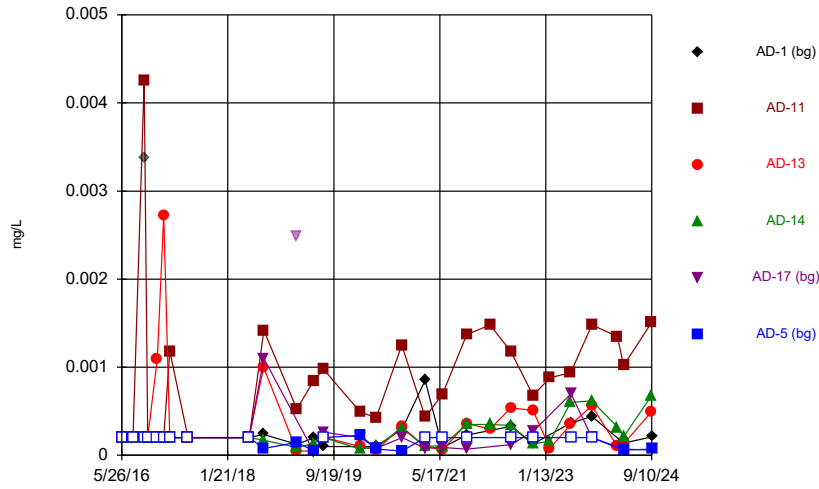
Constituent: Combined Radium 226 + 228 Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



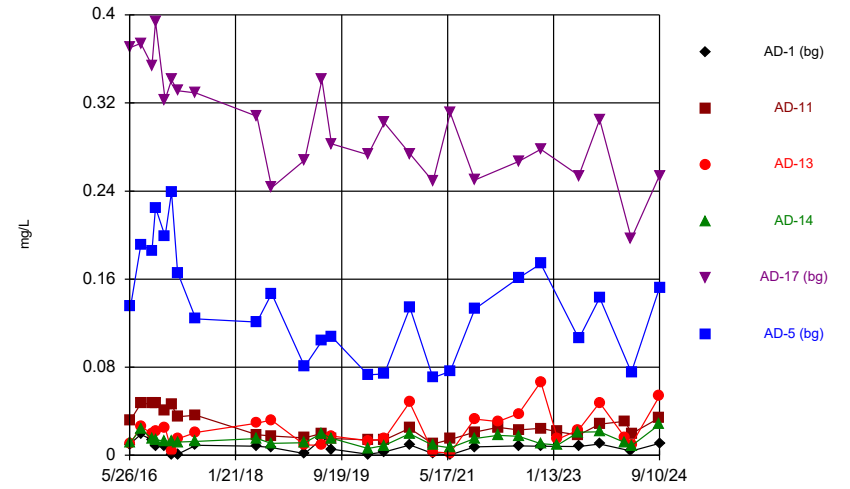
Constituent: Fluoride, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



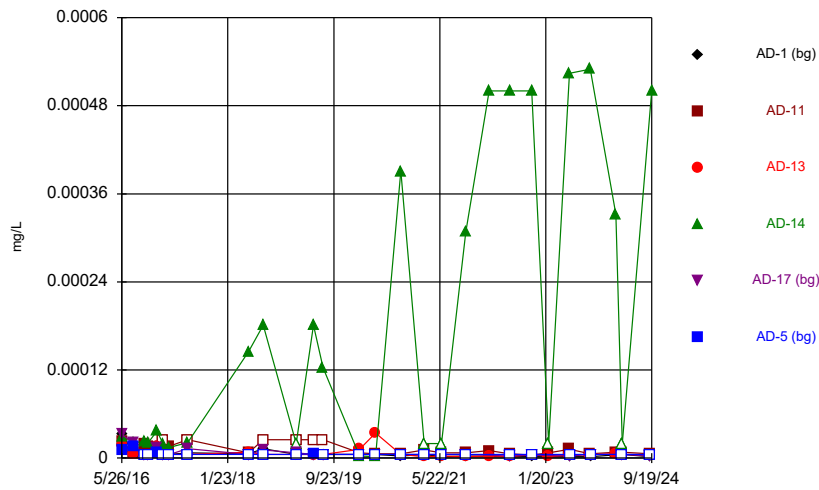
Constituent: Lead, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



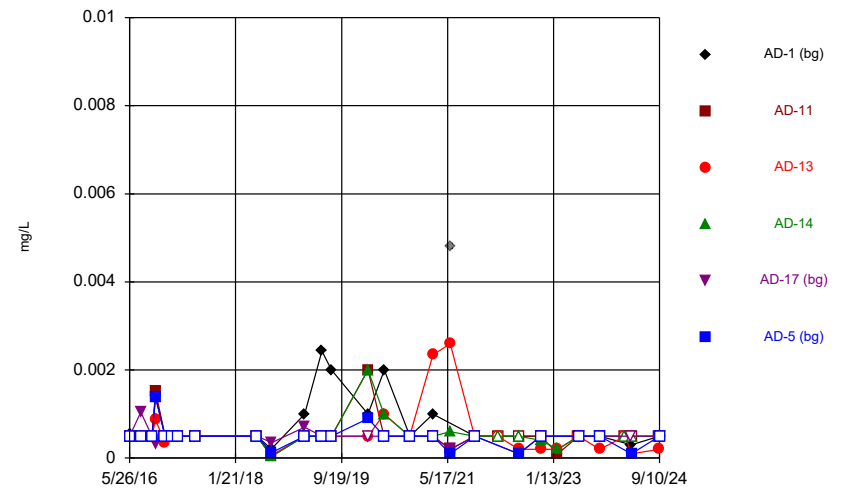
Constituent: Lithium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



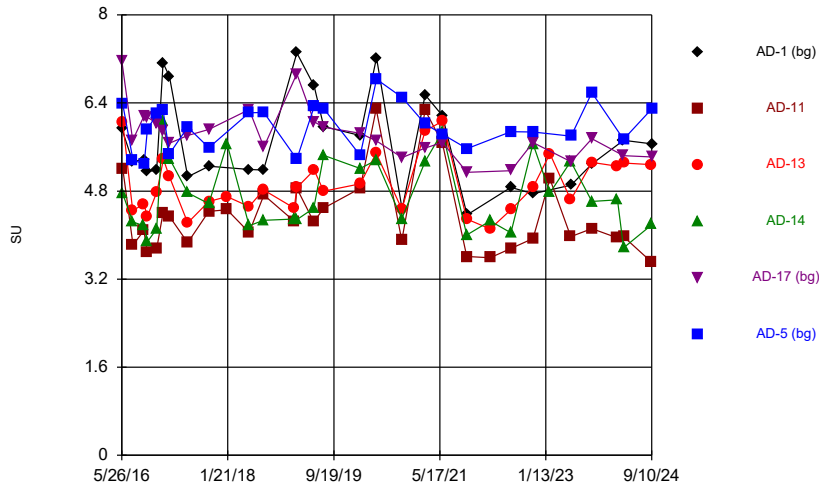
Constituent: Mercury, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



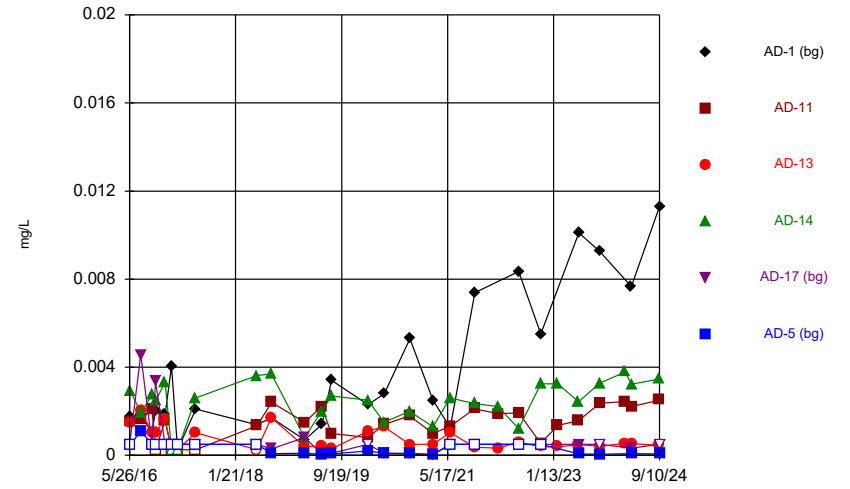
Constituent: Molybdenum, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



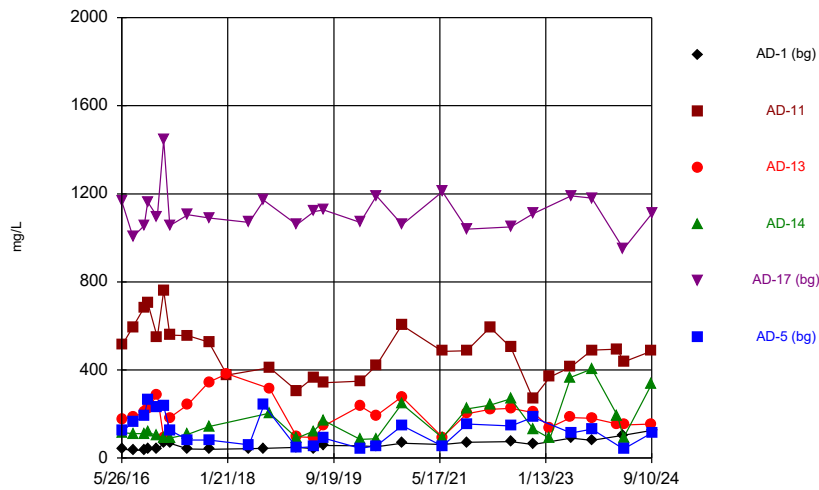
Constituent: pH, field Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



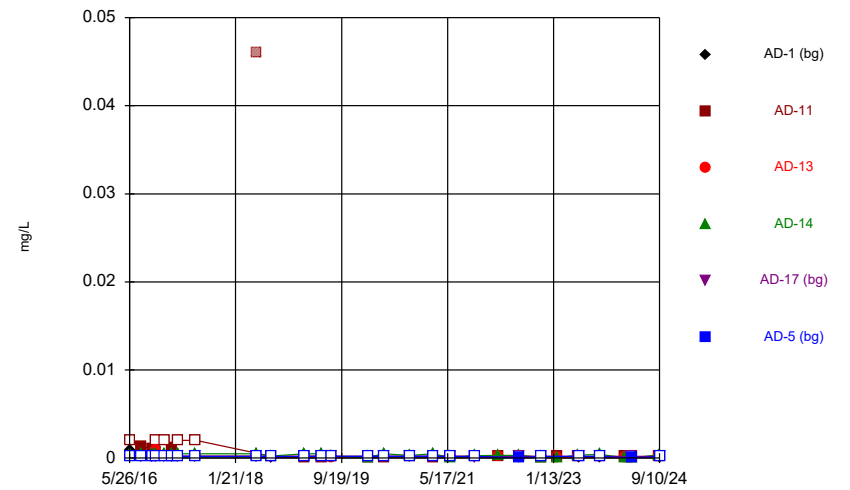
Constituent: Selenium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



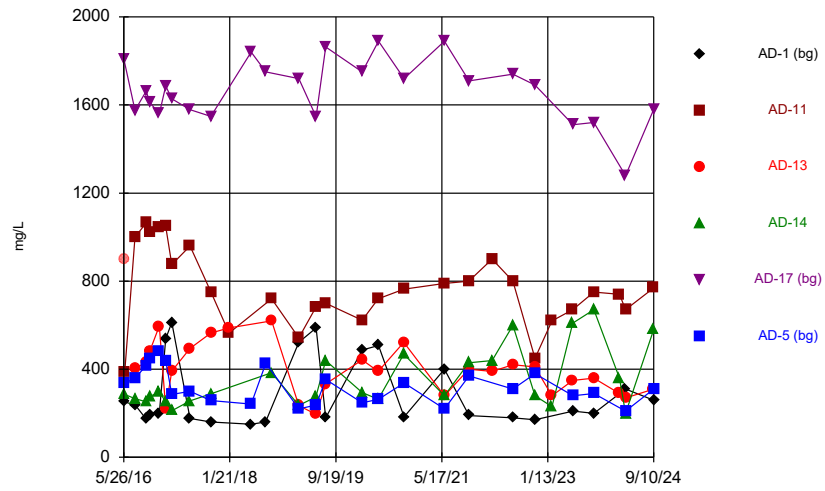
Constituent: Sulfate, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Time Series



Constituent: Thallium, total Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

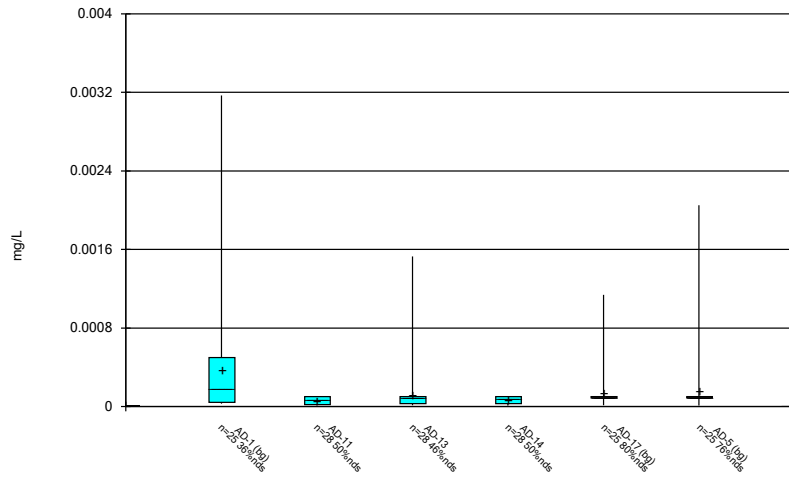
Time Series



Constituent: Total Dissolved Solids Analysis Run 11/19/2024 4:25 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

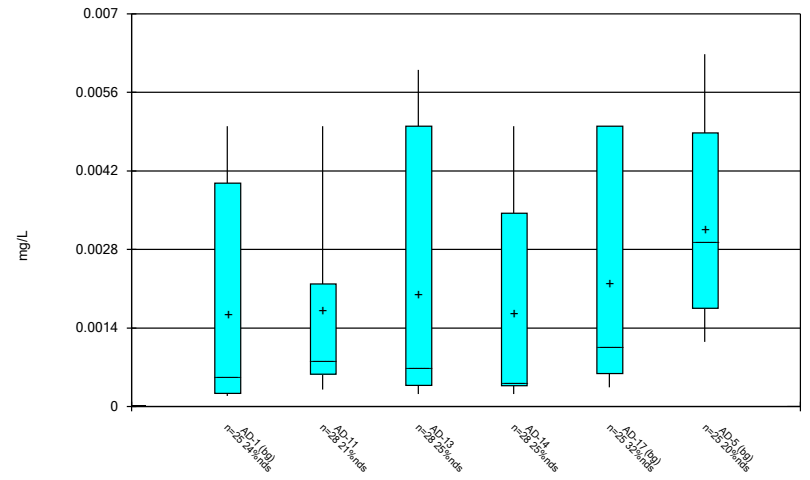
FIGURE B
Box Plots

Box & Whiskers Plot



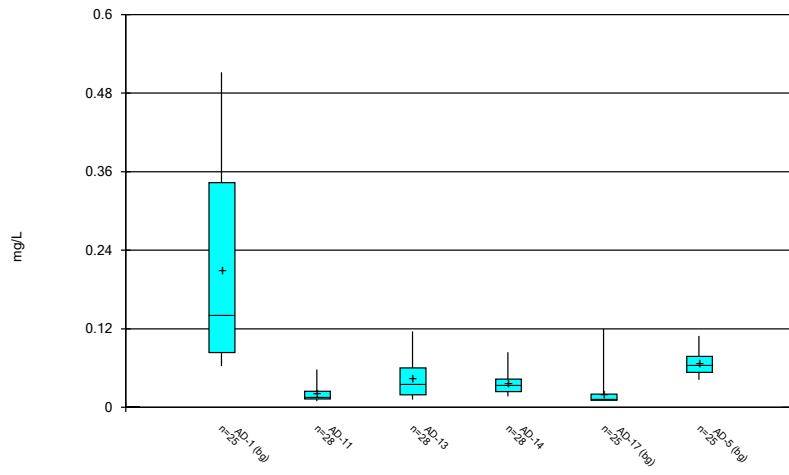
Constituent: Antimony, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



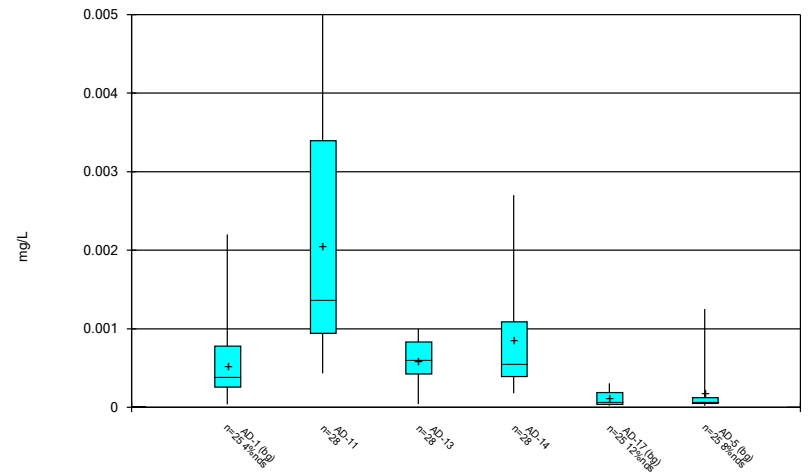
Constituent: Arsenic, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



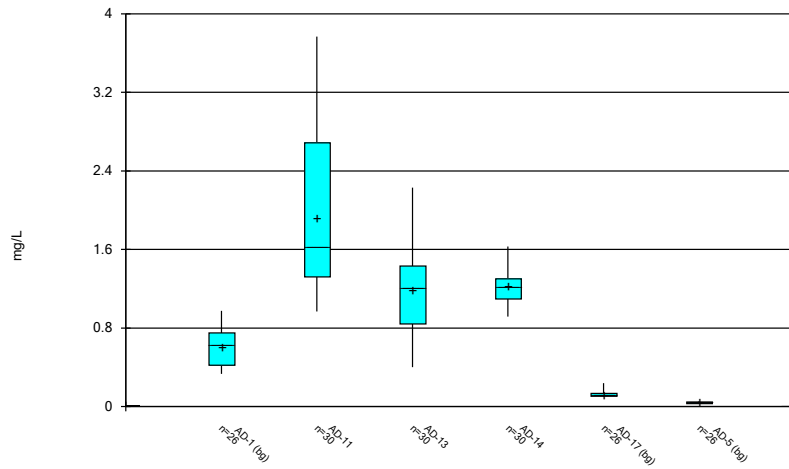
Constituent: Barium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



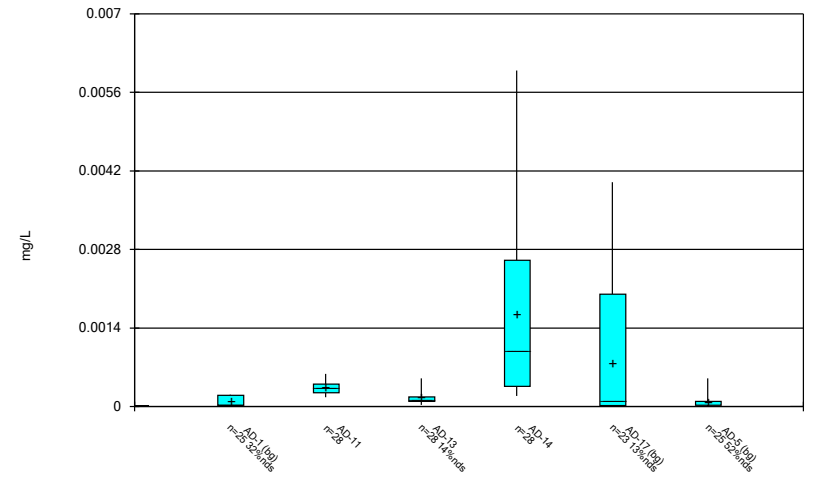
Constituent: Beryllium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



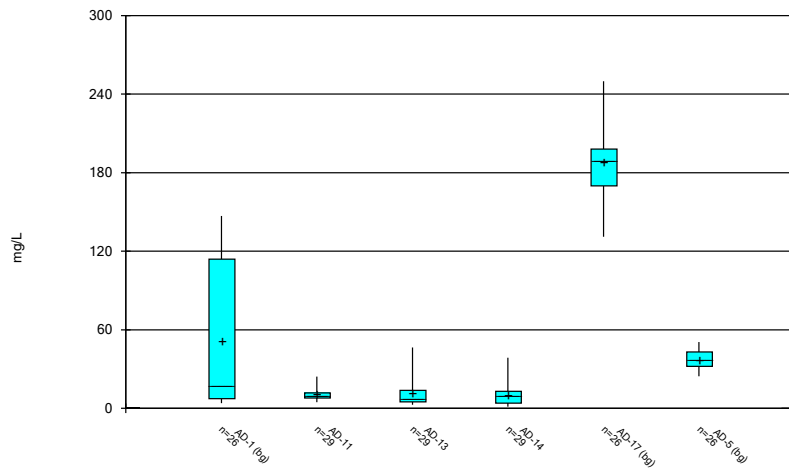
Constituent: Boron, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



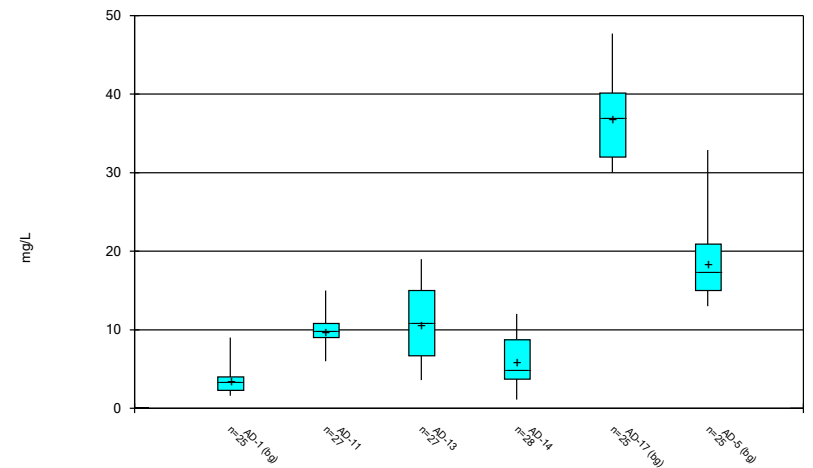
Constituent: Cadmium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



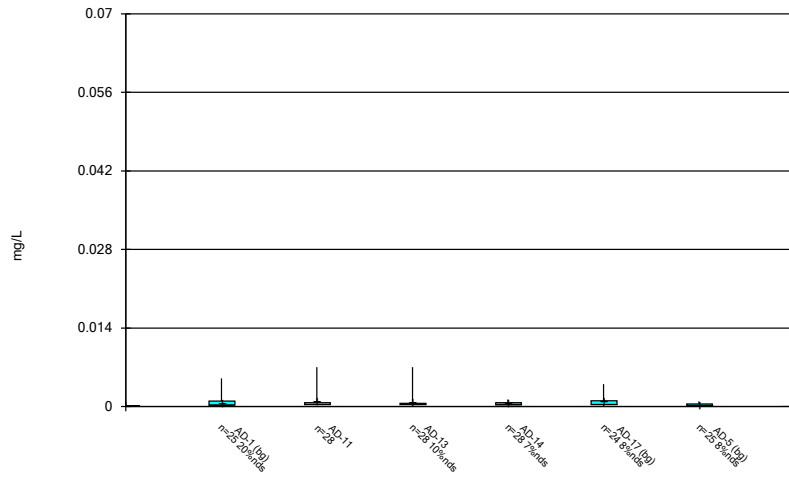
Constituent: Calcium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



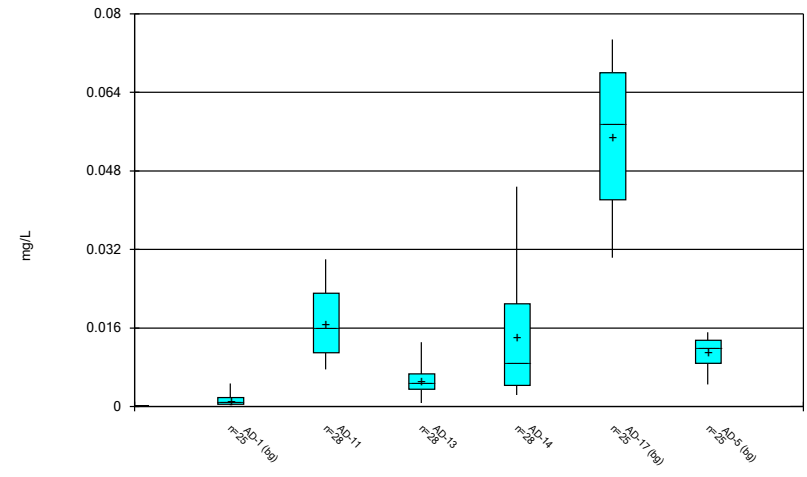
Constituent: Chloride, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



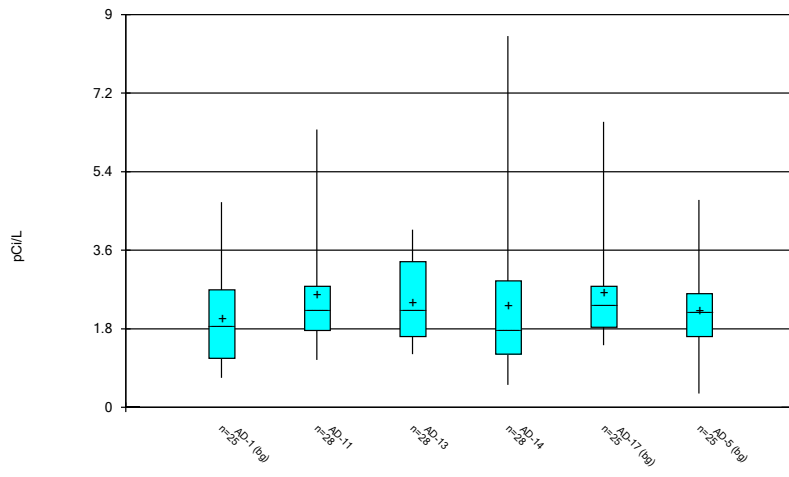
Constituent: Chromium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



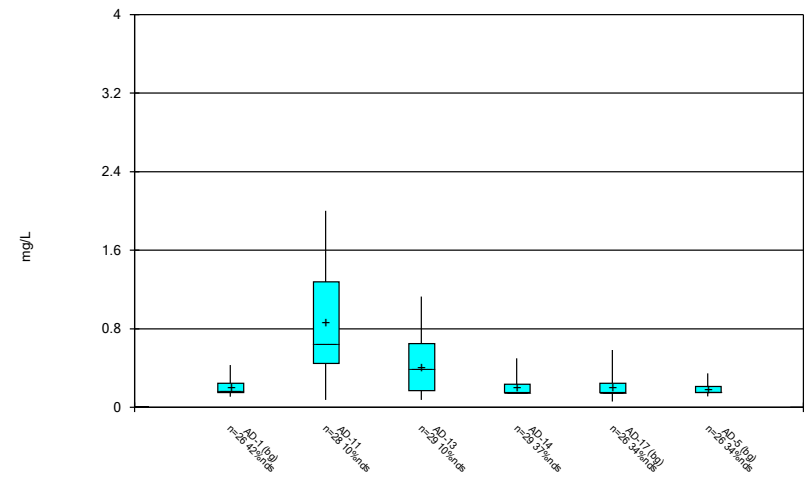
Constituent: Cobalt, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



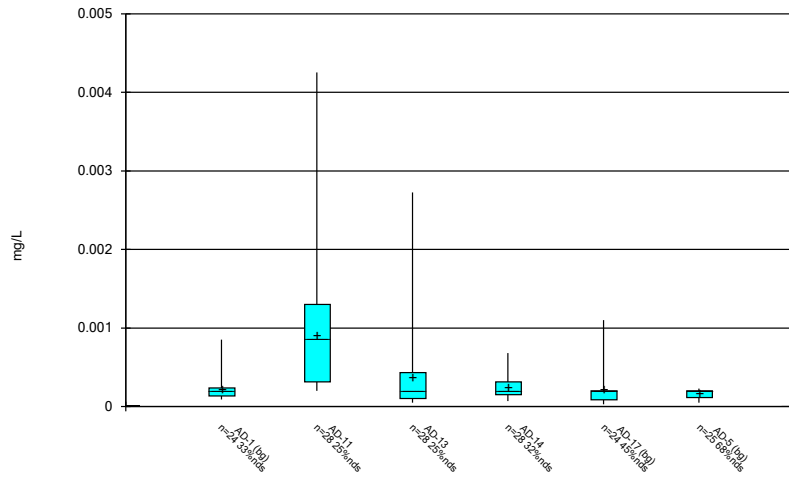
Constituent: Combined Radium 226 + 228 Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



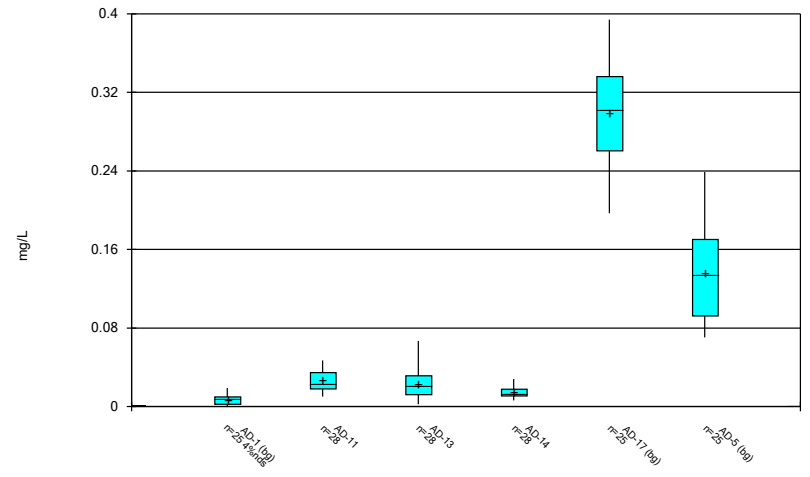
Constituent: Fluoride, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



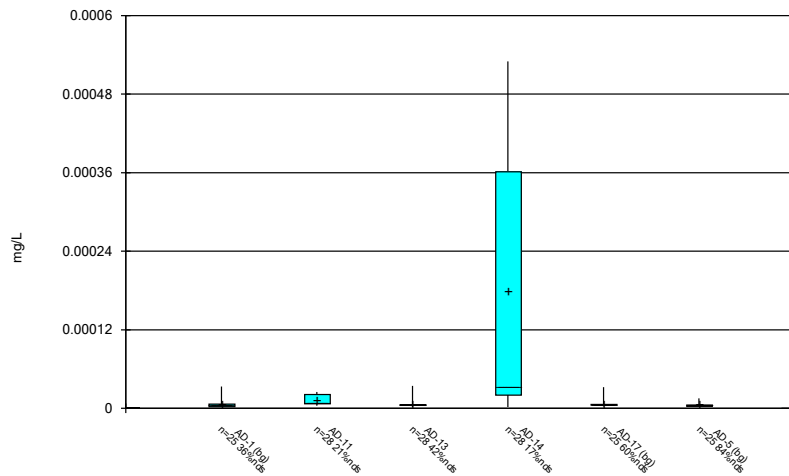
Constituent: Lead, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



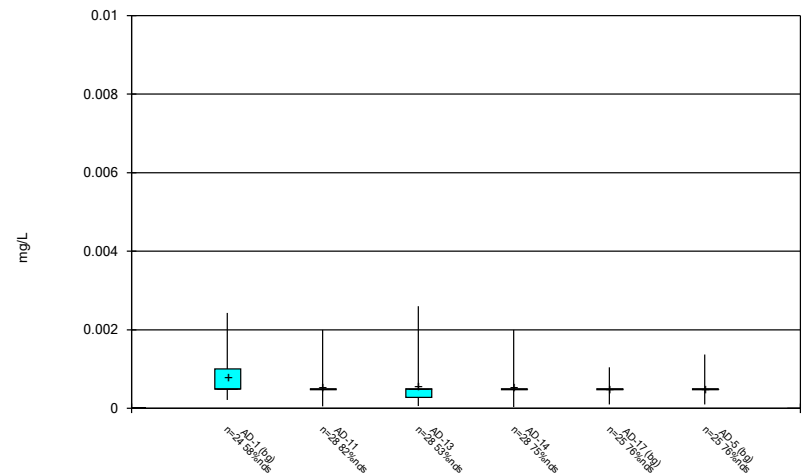
Constituent: Lithium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



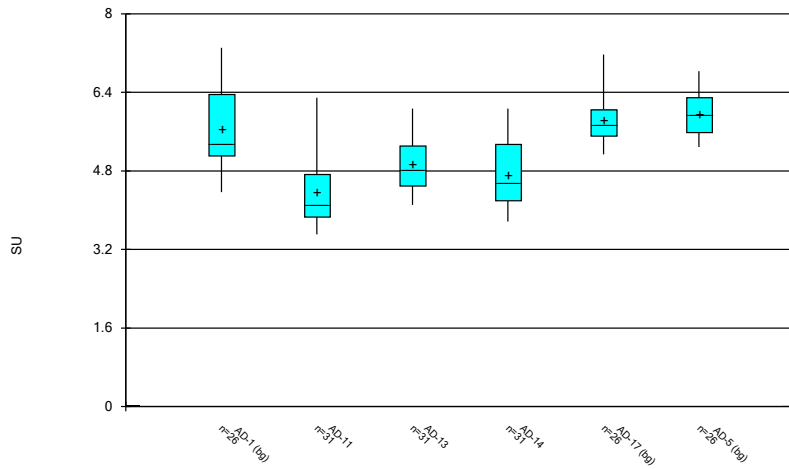
Constituent: Mercury, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



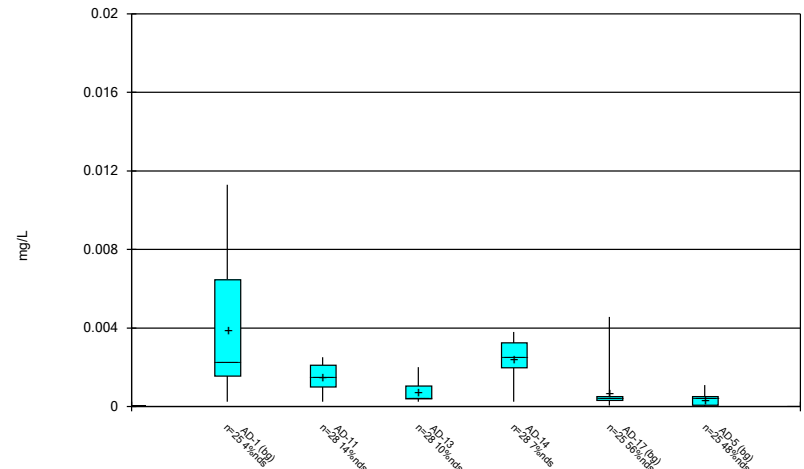
Constituent: Molybdenum, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



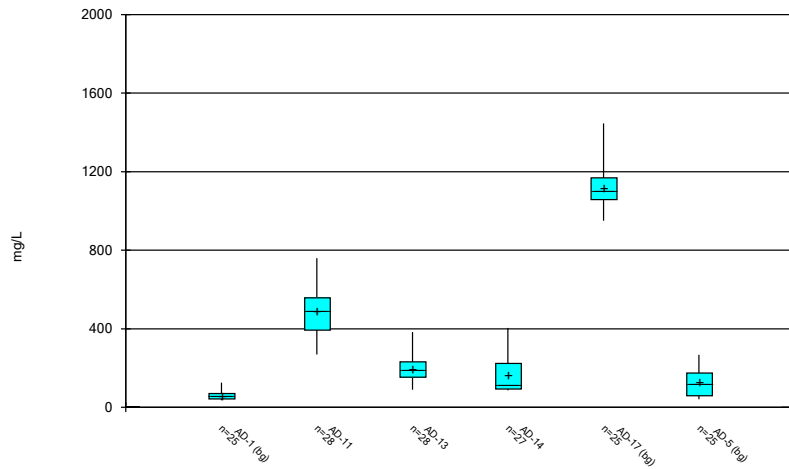
Constituent: pH, field Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



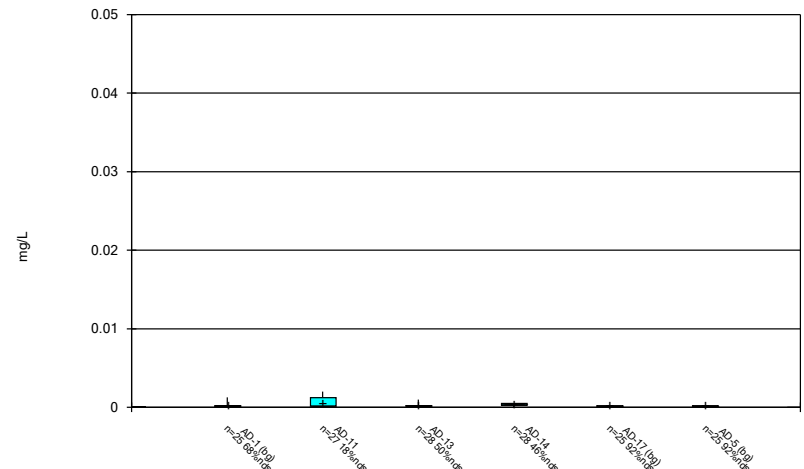
Constituent: Selenium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



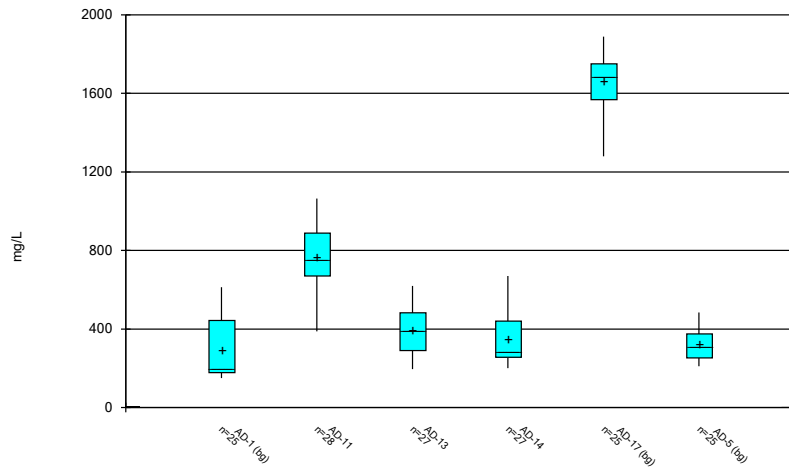
Constituent: Sulfate, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 11/19/2024 4:28 PM View: Descriptive
Welsh Landfill Client: Geosyntec Data: Welsh LF

FIGURE C

Outlier Summary and Tukey's Outlier Test

Outlier Summary

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/19/2024, 4:31 PM

	AD-17 Cadmium, total (mg/L)	AD-17 Chromium, total (mg/L)	AD-11 Fluoride, total (mg/L)	AD-1 Lead, total (mg/L)	AD-17 Lead, total (mg/L)	AD-1 Molybdenum, total (mg/L)	AD-11 Thallium, total (mg/L)	AD-13 Total Dissolved Solids (mg/L)
5/31/2016								900 (o)
9/30/2016				0.00338434 (Jo)				
10/21/2016			3 (o)					
1/20/2017	0.068 (O)							
6/8/2017	0.00606 (o)							
5/23/2018						0.046 (o)		
5/24/2018	0.00646 (o)							
2/21/2019				0.00249 (o)				
6/2/2021					0.0048 (o)			

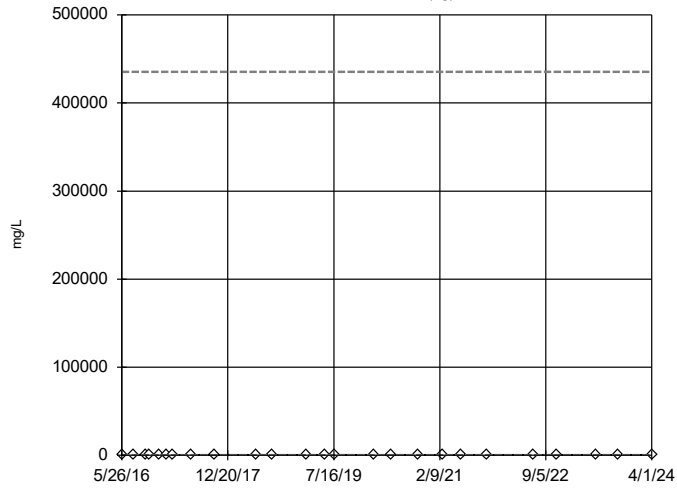
Tukey's Outlier Test - All Results (No Significant)

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 3:59 PM

Constituent	Well	Outlier	Value(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Calcium, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	25	52.63	53.94	ln(x)	ShapiroWilk
Calcium, total (mg/L)	AD-11	No	n/a	NP	NaN	28	11.21	5.573	ln(x)	ShapiroWilk
Calcium, total (mg/L)	AD-13	No	n/a	NP	NaN	28	11.62	11.29	ln(x)	ShapiroWilk
Calcium, total (mg/L)	AD-14	No	n/a	NP	NaN	28	10.05	8.127	ln(x)	ShapiroWilk
Calcium, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	25	188.4	24.52	sqrt(x)	ShapiroWilk
Calcium, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	25	37.48	7.852	x^(1/3)	ShapiroWilk
Chloride, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	24	3.529	1.552	ln(x)	ShapiroWilk
Chloride, total (mg/L)	AD-11	No	n/a	NP	NaN	26	9.758	1.898	normal	ShapiroWilk
Chloride, total (mg/L)	AD-13	No	n/a	NP	NaN	26	10.65	4.985	sqrt(x)	ShapiroWilk
Chloride, total (mg/L)	AD-14	No	n/a	NP	NaN	27	5.766	3.348	x^(1/3)	ShapiroWilk
Chloride, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	24	36.8	4.96	ln(x)	ShapiroWilk
Chloride, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	24	18.11	4.412	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	24	57.11	18.28	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-11	No	n/a	NP	NaN	27	487.7	123	x^(1/3)	ShapiroWilk
Sulfate, total (mg/L)	AD-13	No	n/a	NP	NaN	27	201.7	74.63	sqrt(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-14	No	n/a	NP	NaN	26	157.7	87.53	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	24	1116	95.34	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	24	127.6	69.88	sqrt(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	24	290.9	159.3	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-11	No	n/a	NP	NaN	27	765.1	180.7	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-13	No	n/a	NP	NaN	27	417.1	150.9	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-14	No	n/a	NP	NaN	26	340.2	128.7	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	24	1670	143.4	x^3	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	24	321.6	80.41	ln(x)	ShapiroWilk

Tukey's Outlier Screening

AD-1 (bg)

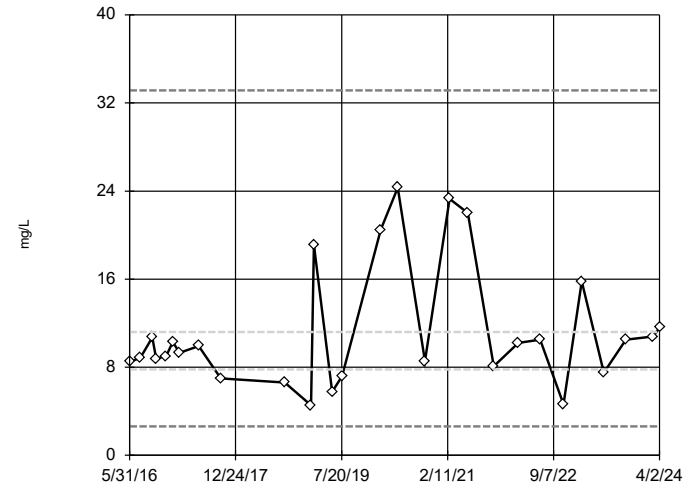


n = 25
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 435182, low cutoff = 0.001911, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-11

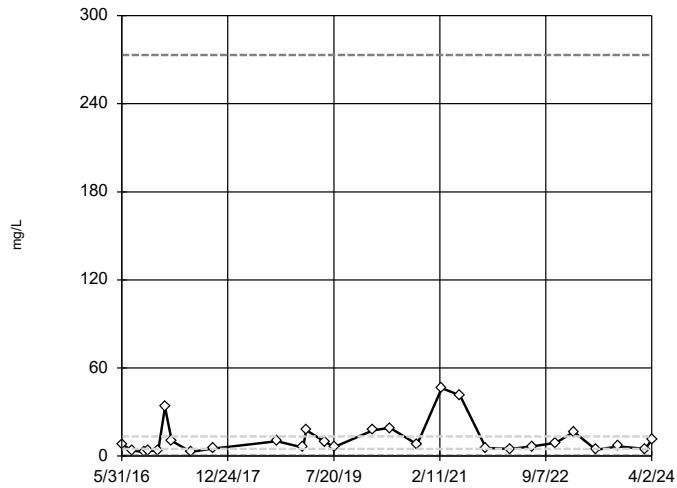


n = 28
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 33.15, low cutoff = 2.632, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-13

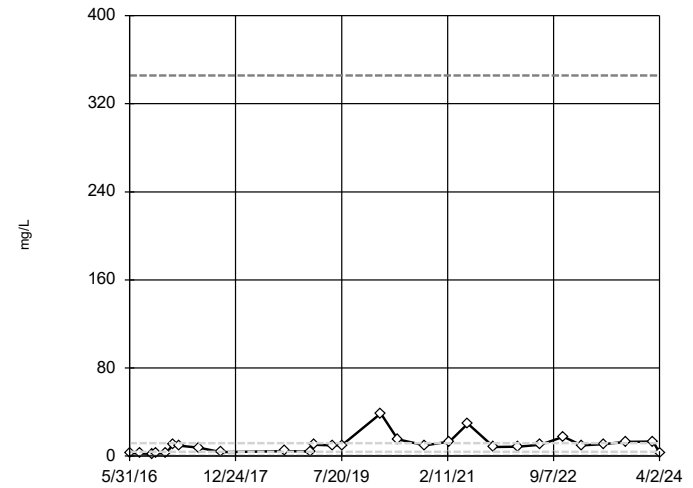


n = 28
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 273.3, low cutoff = 0.2435, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-14

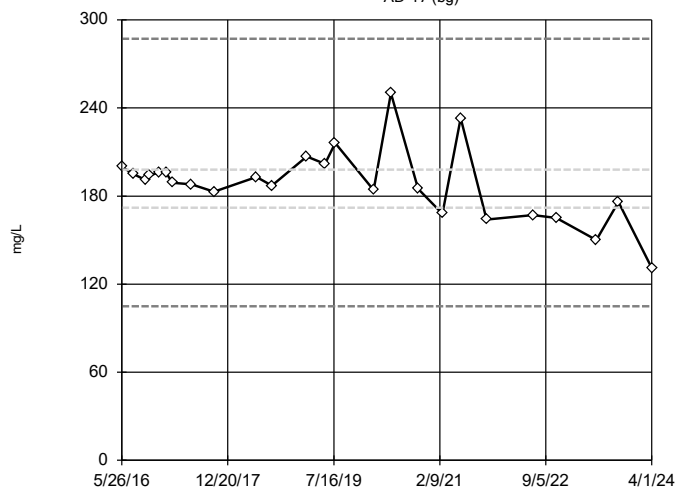


n = 28
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 345.7, low cutoff = 0.1307, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-17 (bg)

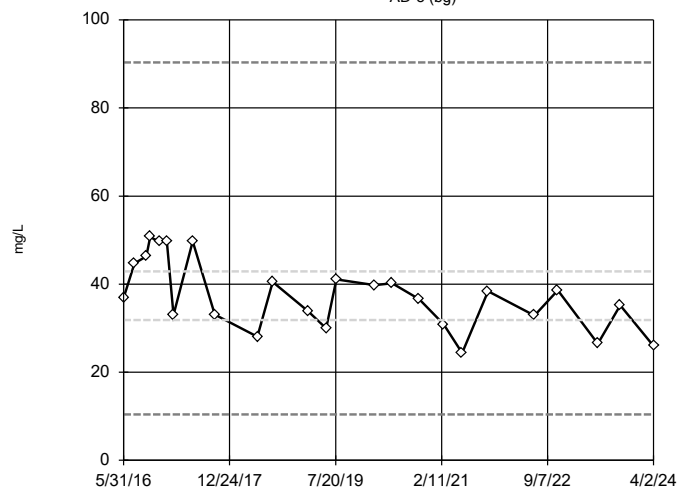


n = 25
No outliers found.
Tukey's method selected by user.
Data were square root transformed to achieve best W statistic (graph shown in original units).
High cutoff = 287, low cutoff = 104.9, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-5 (bg)

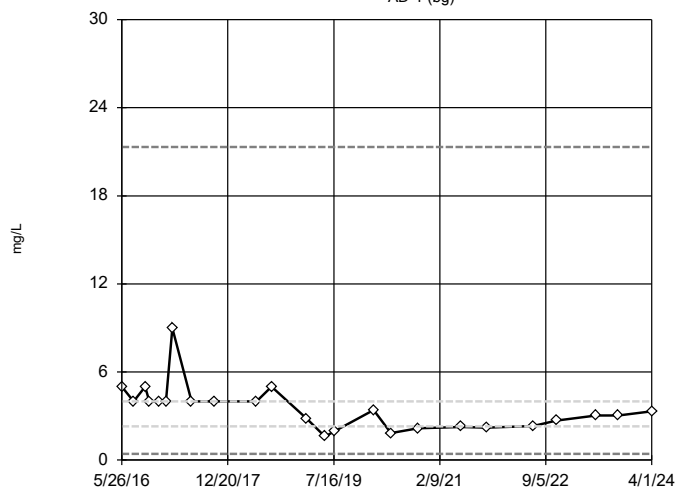


n = 25
No outliers found.
Tukey's method selected by user.
Data were cube root transformed to achieve best W statistic (graph shown in original units).
High cutoff = 90.31, low cutoff = 10.43, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-1 (bg)

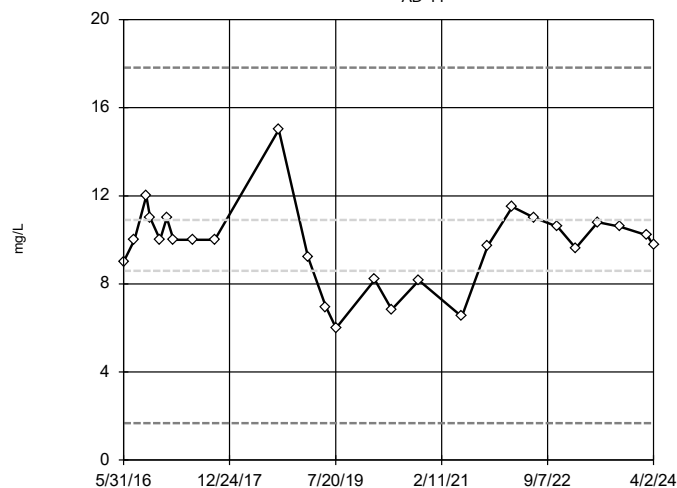


n = 24
No outliers found.
Tukey's method selected by user.
Data were natural log transformed to achieve best W statistic (graph shown in original units).
High cutoff = 21.32, low cutoff = 0.4295, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/16/2024 3:58 PM View: Outlier Testing
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-11

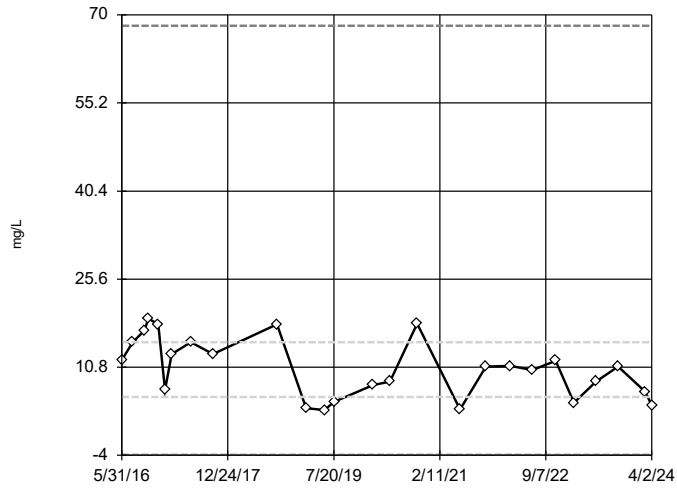


n = 26
No outliers found.
Tukey's method selected by user.
Ladder of Powers transformations did not improve normality, analysis run on raw data.
High cutoff = 17.82, low cutoff = 1.68, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-13

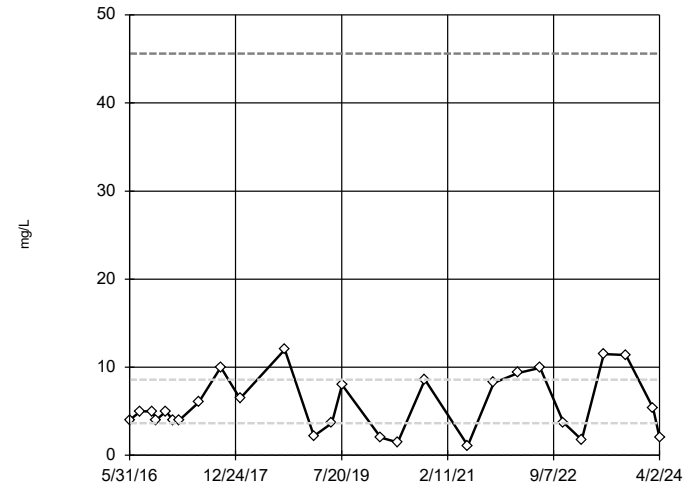


n = 26
 No outliers found.
 Tukey's method selected by user.
 Data were square root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 68.2, low cutoff = -3.896, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-14

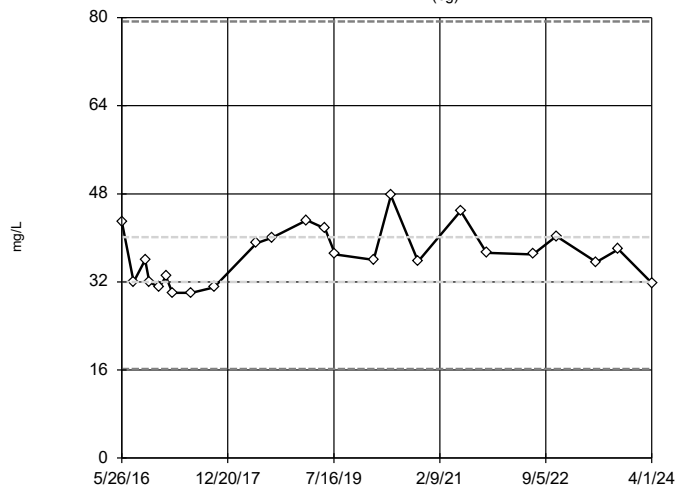


n = 27
 No outliers found.
 Tukey's method selected by user.
 Data were cube root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 45.61, low cutoff = 0.00003184, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-17 (bg)

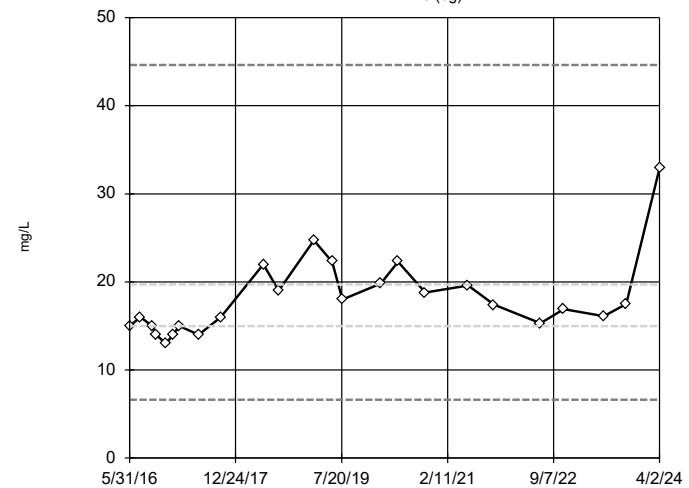


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 79.3, low cutoff = 16.2, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-5 (bg)

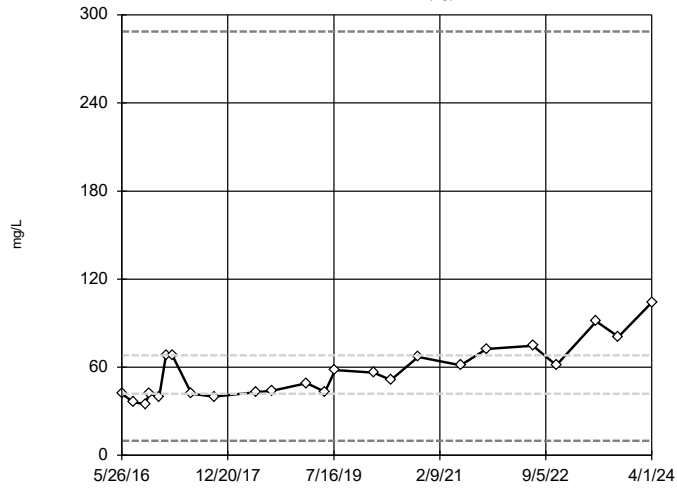


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 44.62, low cutoff = 6.622, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-1 (bg)

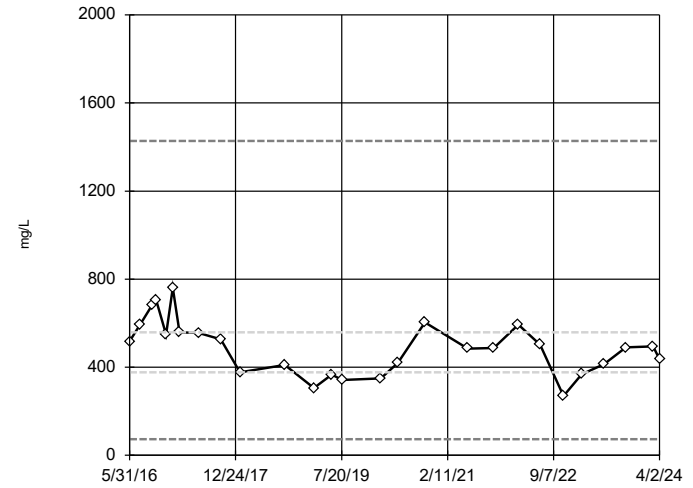


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 288.6, low cutoff = 9.896, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-11

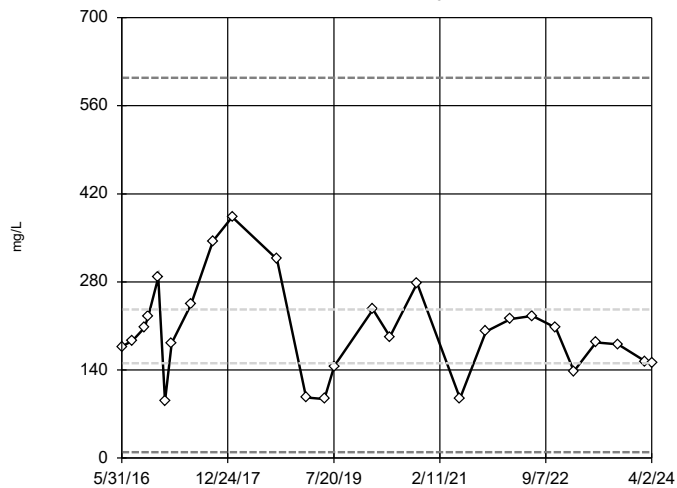


n = 27
 No outliers found.
 Tukey's method selected by user.
 Data were cube root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 1427, low cutoff = 73.98, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-13

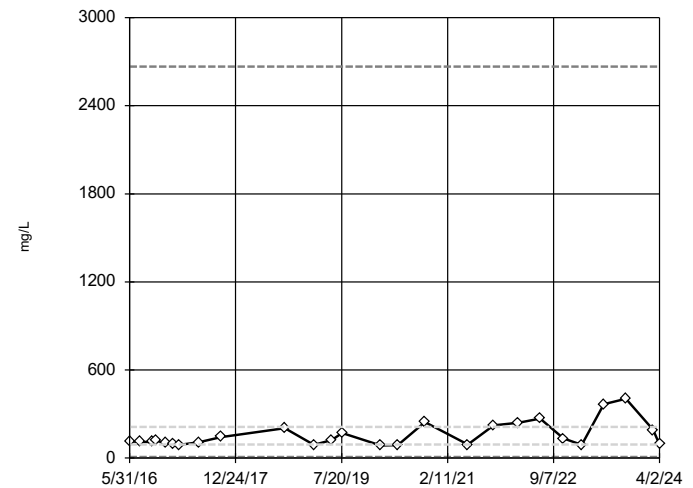


n = 27
 No outliers found.
 Tukey's method selected by user.
 Data were square root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 604.4, low cutoff = 9.4, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-14

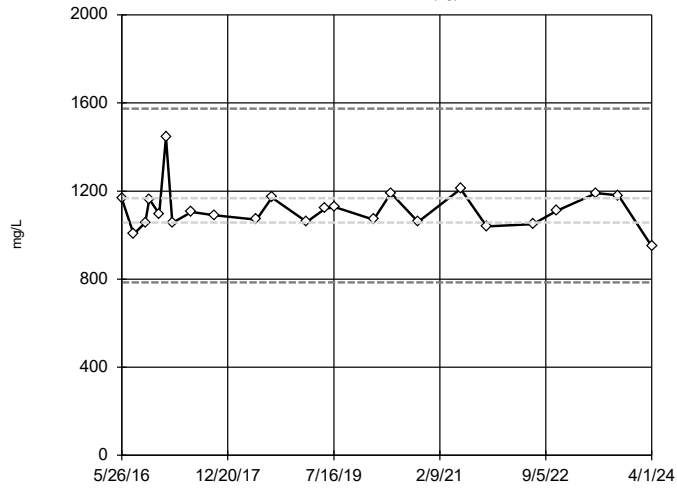


n = 26
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 2666, low cutoff = 7.351, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-17 (bg)

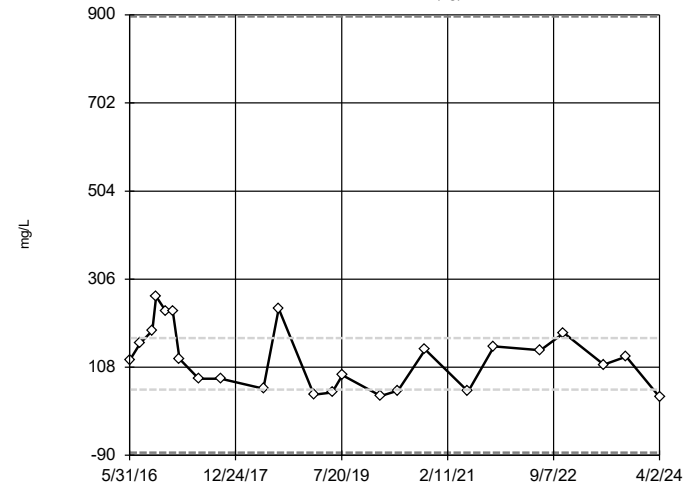


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 1574, low cutoff = 784.9, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-5 (bg)

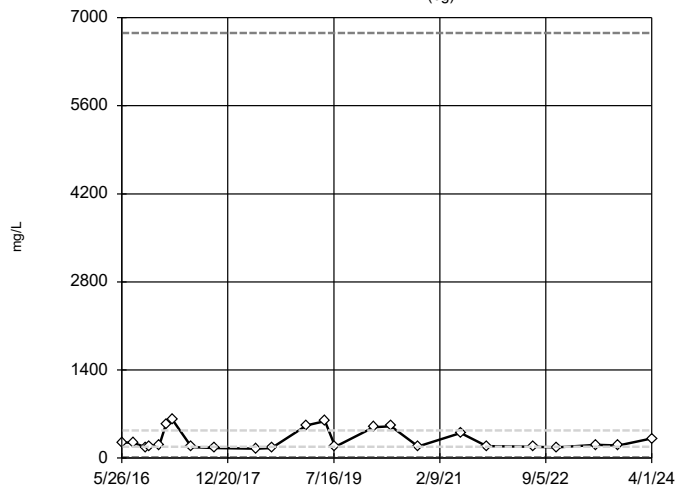


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were square root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 896.6, low cutoff = -83.93, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-1 (bg)

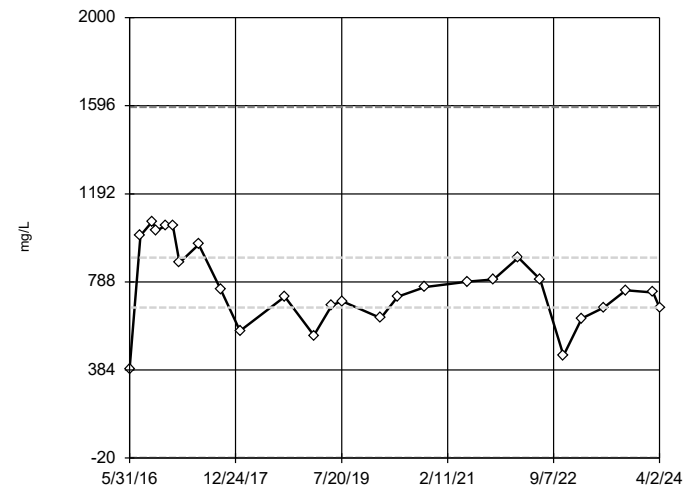


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 6757, low cutoff = 11.64, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-11

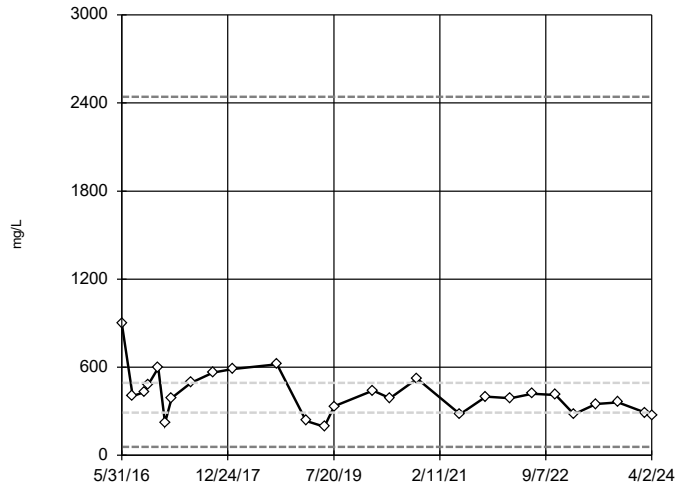


n = 27
 No outliers found.
 Tukey's method selected by user.
 Ladder of Powers transformations did not improve normality; analysis run on raw data.
 High cutoff = 1590, low cutoff = -20, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-13

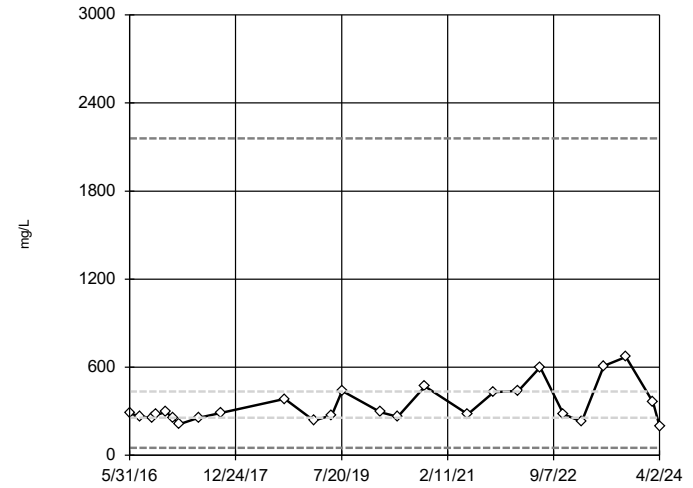


n = 27
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 2442, low cutoff = 58.67, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-14

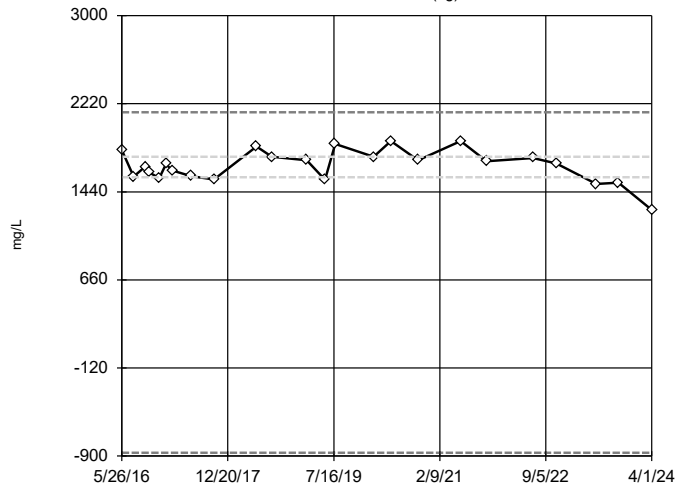


n = 26
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 2159, low cutoff = 51.38, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-17 (bg)

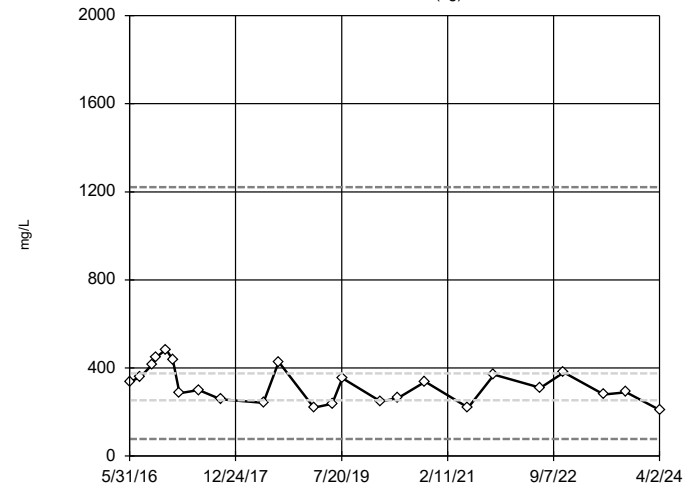


n = 24
 No outliers found.
 Tukey's method selected by user.
 Data were cube transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 2145, low cutoff = -869.1, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening

AD-5 (bg)



n = 24
 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 = 1221, low cutoff = 77.65, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:59 PM View: Outlier Testing
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Test - Upgradient Wells - Significant Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:24 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Chromium, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.068	NP	NaN	75	0.001497	0.007828	In(x)	ShapiroFrancia
Lead, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.003384,0.000852,0.0011,0.00249	NP	NaN	75	0.0002788	0.0004769	In(x)	ShapiroFrancia

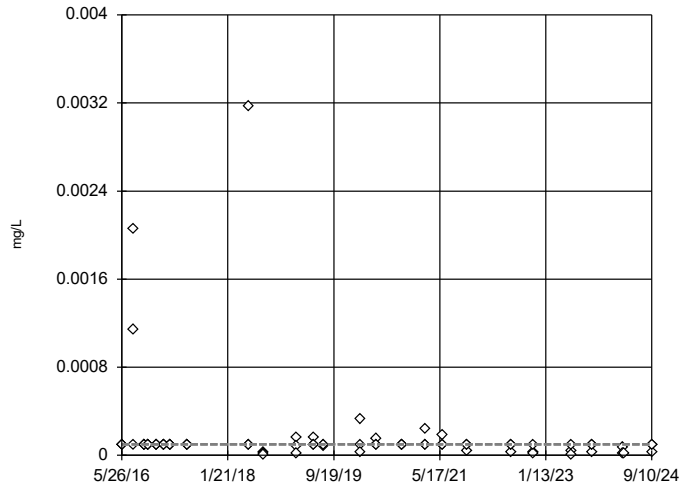
Tukey's Outlier Test - Upgradient Wells - All Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:24 PM

Constituent	Well	Outlier	Value(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	75	0.000173	0.0004363	unknown	ShapiroFrancia
Arsenic, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.002341	0.001931	ln(x)	ShapiroFrancia
Barium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.09857	0.119	ln(x)	ShapiroFrancia
Beryllium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.0003258	0.0004409	ln(x)	ShapiroFrancia
Boron, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	78	0.2554	0.2716	ln(x)	ShapiroFrancia
Cadmium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.0004399	0.001227	ln(x)	ShapiroFrancia
Chromium, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.068	NP	NaN	75	0.001497	0.007828	ln(x)	ShapiroFrancia
Cobalt, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.02245	0.02491	x^(1/3)	ShapiroFrancia
Combined Radium 226 + 228 (pCi/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	2.305	1.117	x^(1/3)	ShapiroFrancia
Fluoride, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	78	0.1974	0.09403	ln(x)	ShapiroFrancia
Lead, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.003384,0.000852,0.0011,0.00249	NP	NaN	75	0.0002788	0.0004769	ln(x)	ShapiroFrancia
Lithium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.1473	0.1264	sqrt(x)	ShapiroFrancia
Mercury, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	75	0.000006679	0.000005626	unknown	ShapiroFrancia
Molybdenum, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	75	0.0006411	0.0006268	unknown	ShapiroFrancia
pH, field (SU)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	78	5.824	0.6133	ln(x)	ShapiroFrancia
Selenium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	75	0.001636	0.002529	ln(x)	ShapiroFrancia
Thallium, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	75	0.0002037	0.000161	unknown	ShapiroFrancia

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

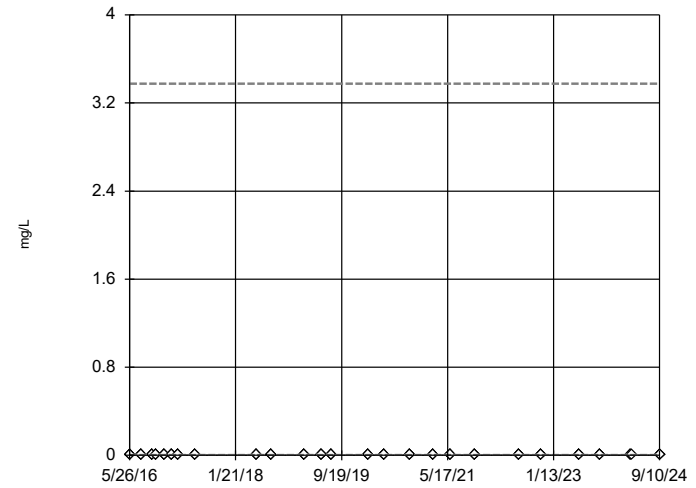


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

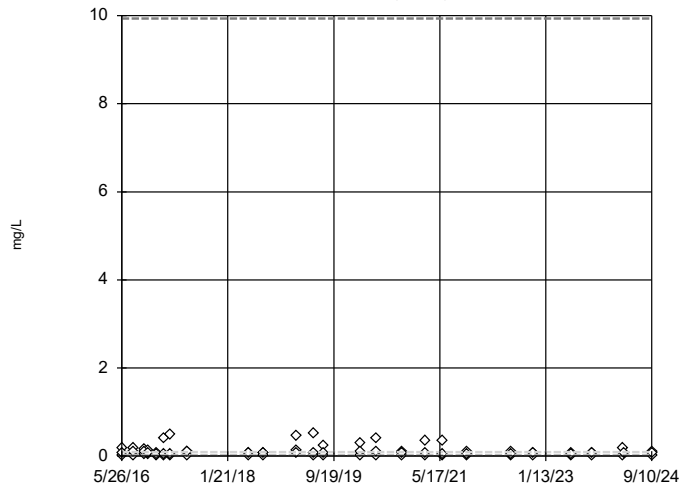


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 3.375, low cutoff = 8.4e-7, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

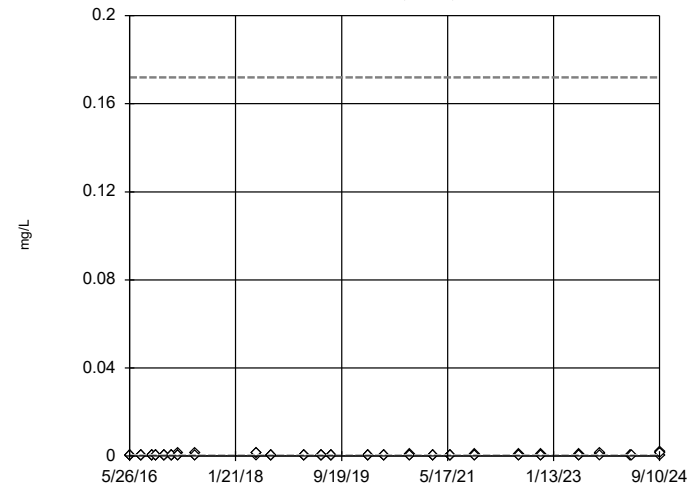


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 9.935, low cutoff = 0.0001835, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

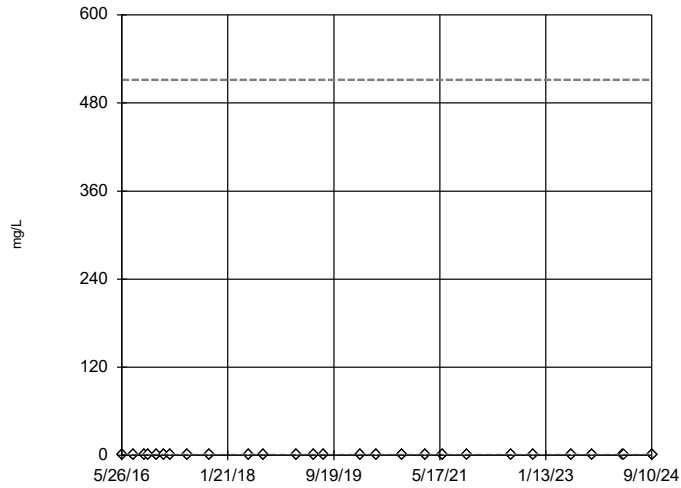


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 0.1719, low cutoff = 1.1e-7, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

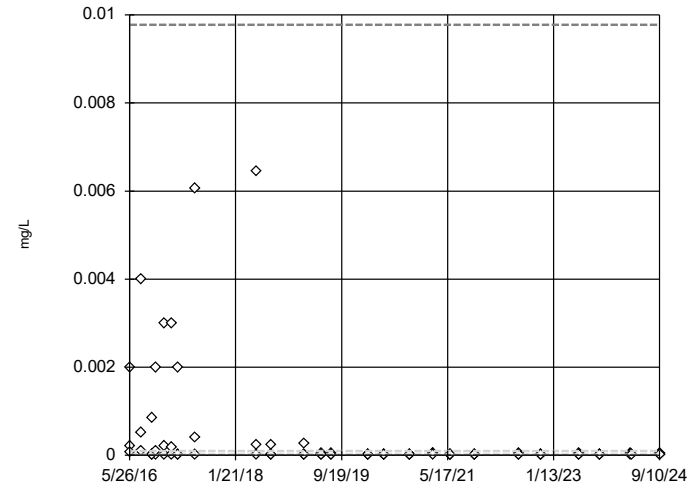


n = 78
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 511.6, low cutoff = 0.00003714, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

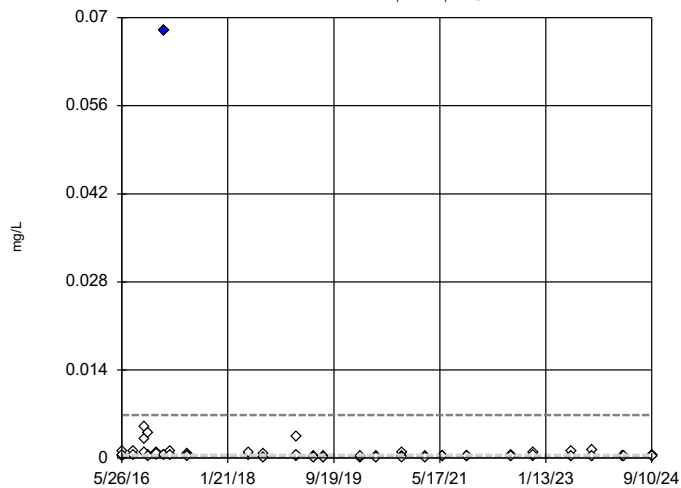


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 0.009774, low cutoff = 1.9e-7, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

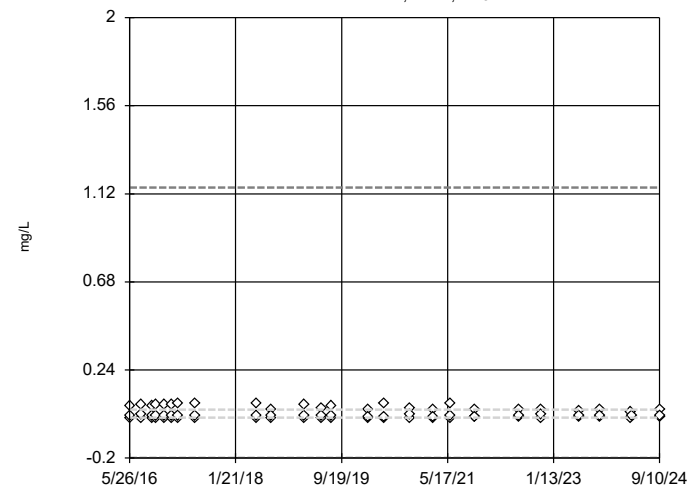


n = 75
 Outlier is drawn as solid.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 0.006842, low cutoff = 0.00001949, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

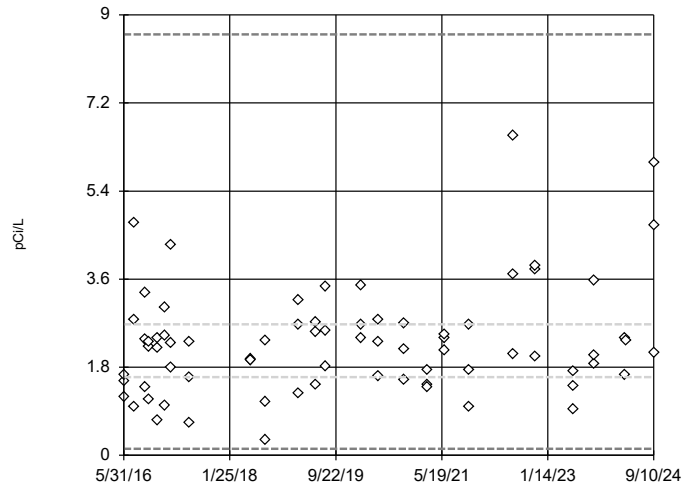


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were cube root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 1.151, low cutoff = -0.1996, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

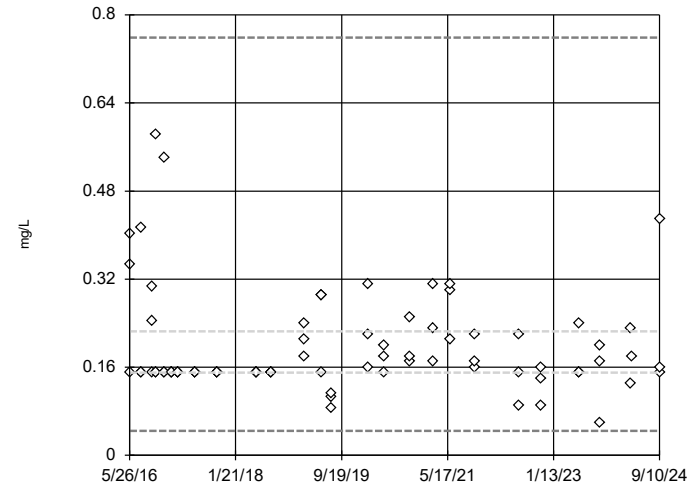


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were cube root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 8.6, low cutoff = 0.1322, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgr
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

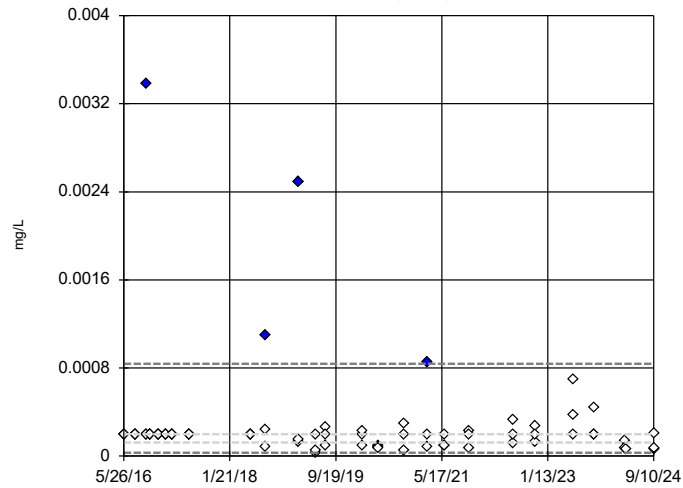


n = 78
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 0.7586, low cutoff = 0.04448, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

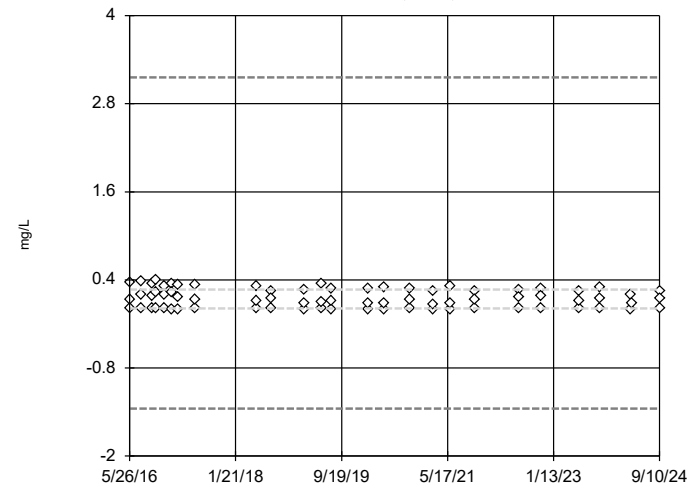


n = 75
 Outliers are drawn as solid.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 0.0008392, low cutoff = 0.00002955, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

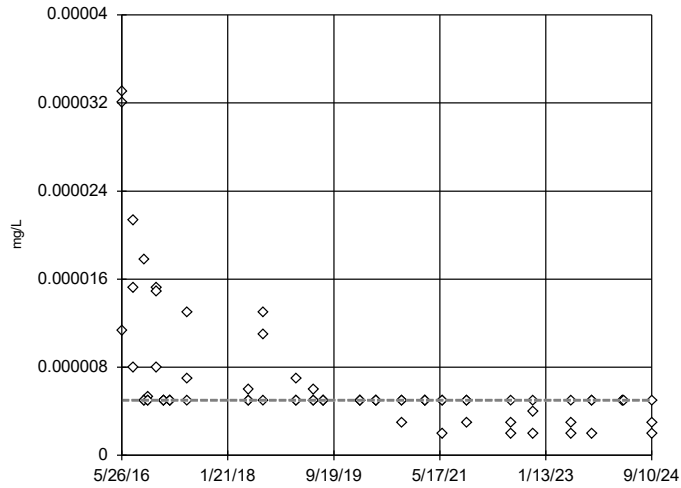


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were square root transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 3.159, low cutoff = -1.355, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

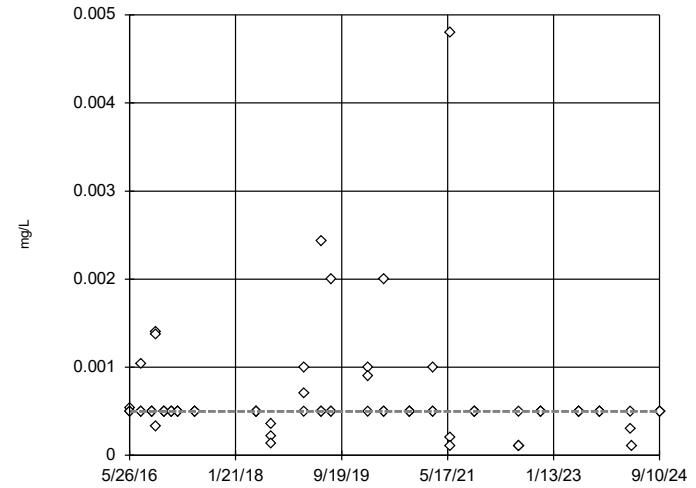


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

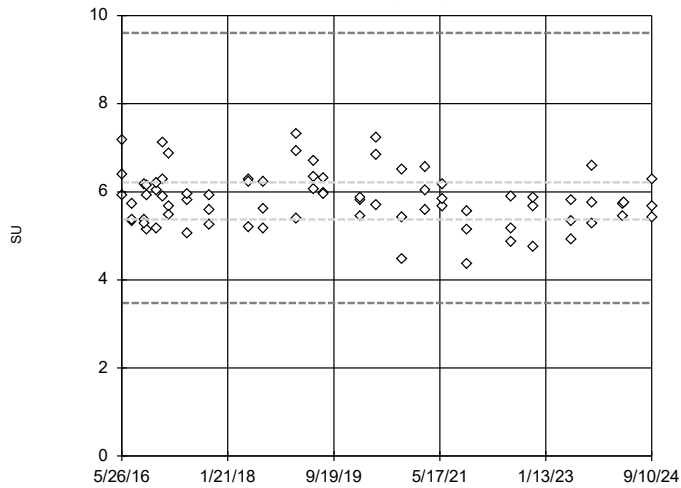


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

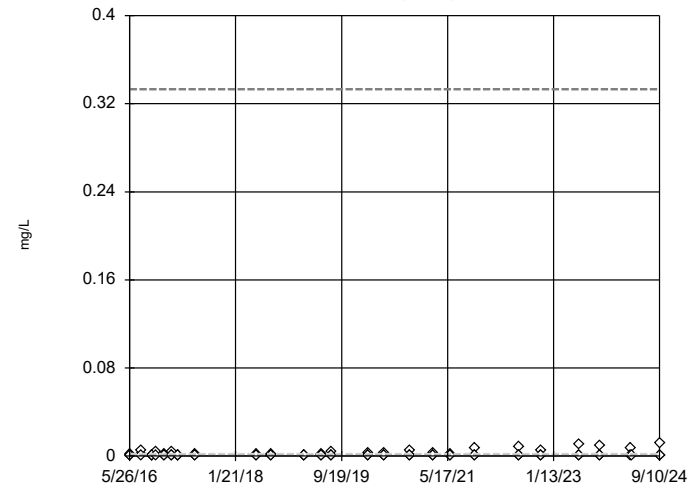


n = 78
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 9.608, low cutoff = 3.477, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

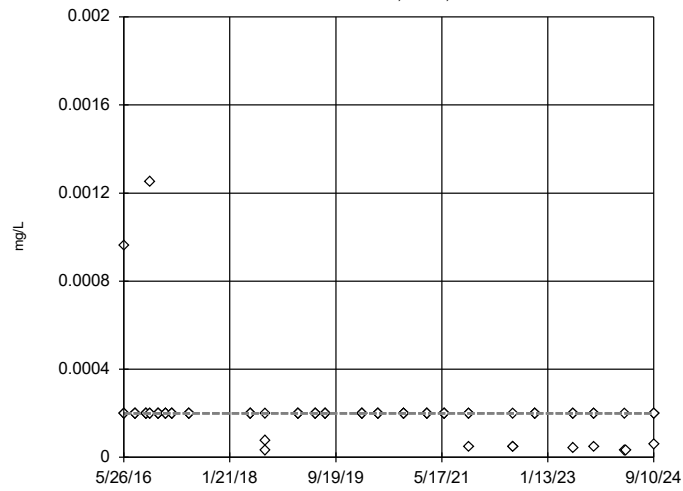


n = 75
 No outliers found.
 Tukey's method selected by user.
 Data were natural log transformed to achieve best W statistic (graph shown in original units).
 High cutoff = 0.3331, low cutoff = 0.000001746, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5



n = 75

No outliers found.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium, total Analysis Run 11/16/2024 4:23 PM View: Outlier Testing - Upgradient

Welsh Landfill Client: Geosyntec Data: Welsh LF

FIGURE D
Mann-Whitney

Welch's t-test/Mann-Whitney - Significant Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 3:49 PM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.01</u>	<u>Alpha</u>	<u>Sig.</u>	<u>Method</u>
Calcium, total (mg/L)	AD-17 (bg)	-2.854	Yes	0.01	Yes	Mann-W
Sulfate, total (mg/L)	AD-1 (bg)	2.598	Yes	0.01	Yes	Mann-W

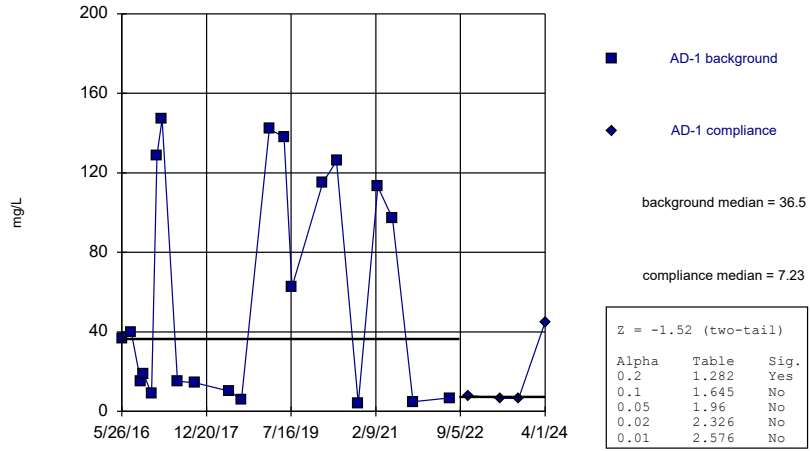
Welch's t-test/Mann-Whitney - All Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 3:49 PM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.01</u>	<u>Alpha</u>	<u>Sig.</u>	<u>Method</u>
Calcium, total (mg/L)	AD-1 (bg)	-1.52	No	0.01	No	Mann-W
Calcium, total (mg/L)	AD-11	0.336	No	0.01	No	Mann-W
Calcium, total (mg/L)	AD-13	-0.02799	No	0.01	No	Mann-W
Calcium, total (mg/L)	AD-14	1.456	No	0.01	No	Mann-W
Calcium, total (mg/L)	AD-17 (bg)	-2.854	Yes	0.01	Yes	Mann-W
Calcium, total (mg/L)	AD-5 (bg)	-1.594	No	0.01	No	Mann-W
Chloride, total (mg/L)	AD-1 (bg)	-0.7458	No	0.01	No	Mann-W
Chloride, total (mg/L)	AD-11	0.764	No	0.01	No	Mann-W
Chloride, total (mg/L)	AD-13	-1.522	No	0.01	No	Mann-W
Chloride, total (mg/L)	AD-14	-0.08767	No	0.01	No	Mann-W
Chloride, total (mg/L)	AD-17 (bg)	-0.1163	No	0.01	No	Mann-W
Chloride, total (mg/L)	AD-5 (bg)	0.8151	No	0.01	No	Mann-W
Sulfate, total (mg/L)	AD-1 (bg)	2.598	Yes	0.01	Yes	Mann-W
Sulfate, total (mg/L)	AD-11	-1.662	No	0.01	No	Mann-W
Sulfate, total (mg/L)	AD-13	-1.517	No	0.01	No	Mann-W
Sulfate, total (mg/L)	AD-14	0.9435	No	0.01	No	Mann-W
Sulfate, total (mg/L)	AD-17 (bg)	0.4652	No	0.01	No	Mann-W
Sulfate, total (mg/L)	AD-5 (bg)	-0.4261	No	0.01	No	Mann-W
Total Dissolved Solids (mg/L)	AD-1 (bg)	-0.2325	No	0.01	No	Mann-W
Total Dissolved Solids (mg/L)	AD-11	-2.071	No	0.01	No	Mann-W
Total Dissolved Solids (mg/L)	AD-13	-1.826	No	0.01	No	Mann-W
Total Dissolved Solids (mg/L)	AD-14	0.2435	No	0.01	No	Mann-W
Total Dissolved Solids (mg/L)	AD-17 (bg)	-2.442	No	0.01	No	Mann-W
Total Dissolved Solids (mg/L)	AD-5 (bg)	-0.8135	No	0.01	No	Mann-W

Mann-Whitney (Wilcoxon Rank Sum)

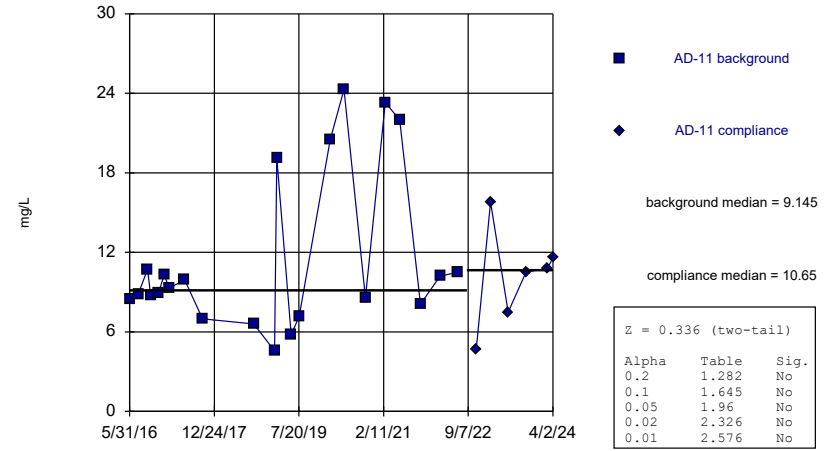
AD-1 (bg)



Constituent: Calcium, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

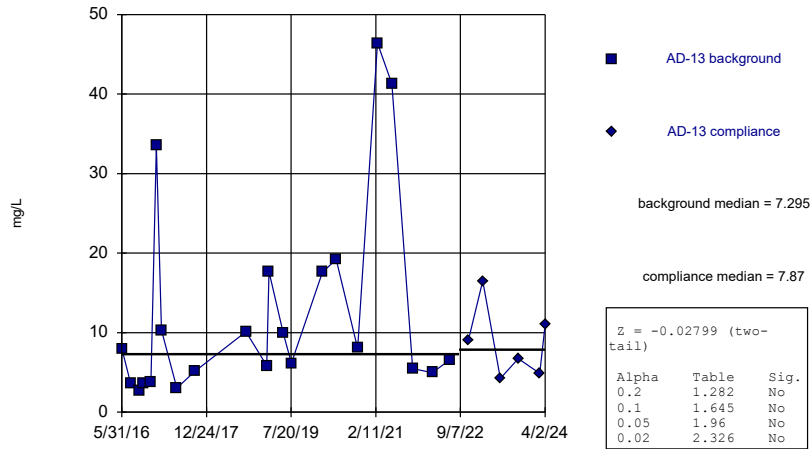
AD-11



Constituent: Calcium, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

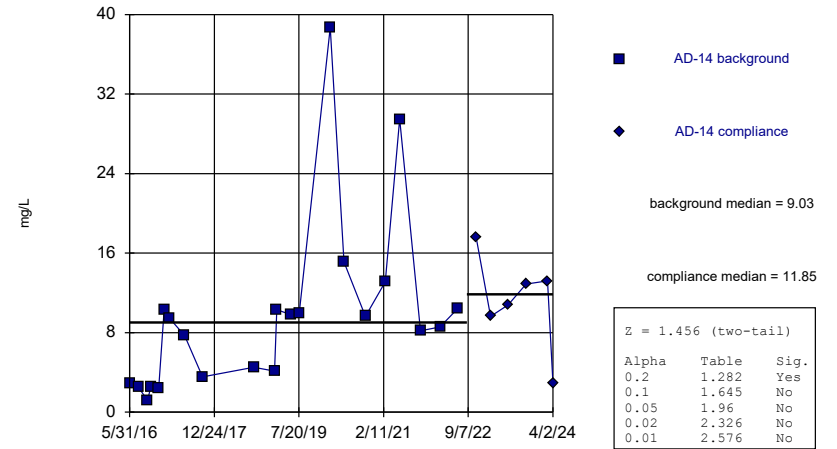
AD-13



Constituent: Calcium, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

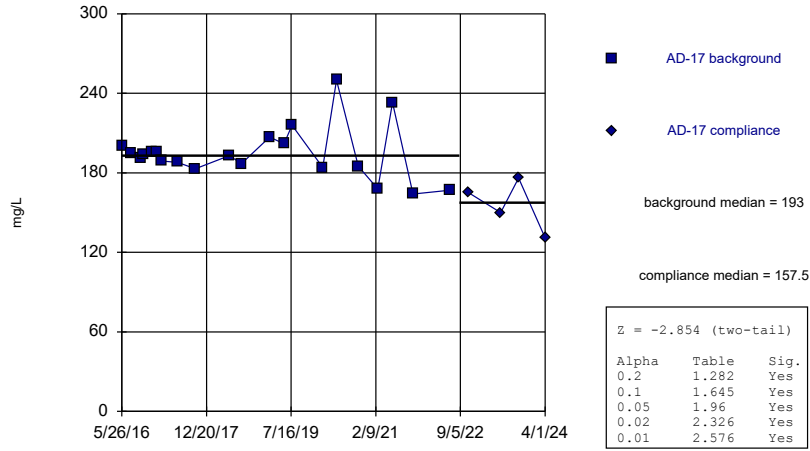
AD-14



Constituent: Calcium, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

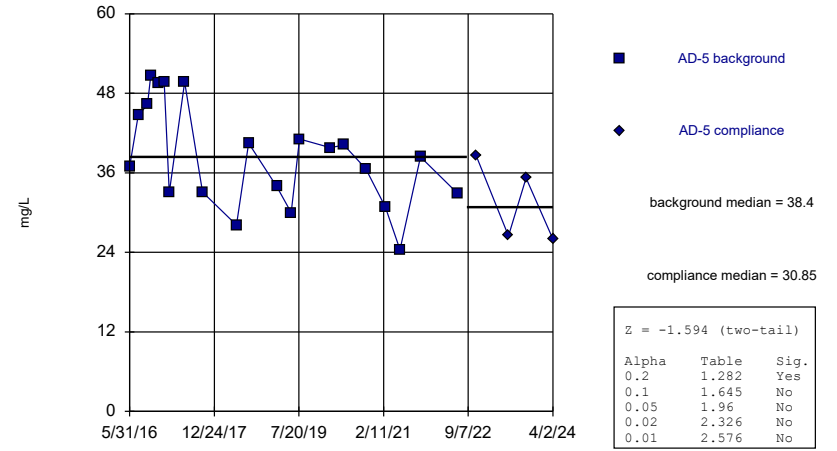
AD-17 (bg)



Constituent: Calcium, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

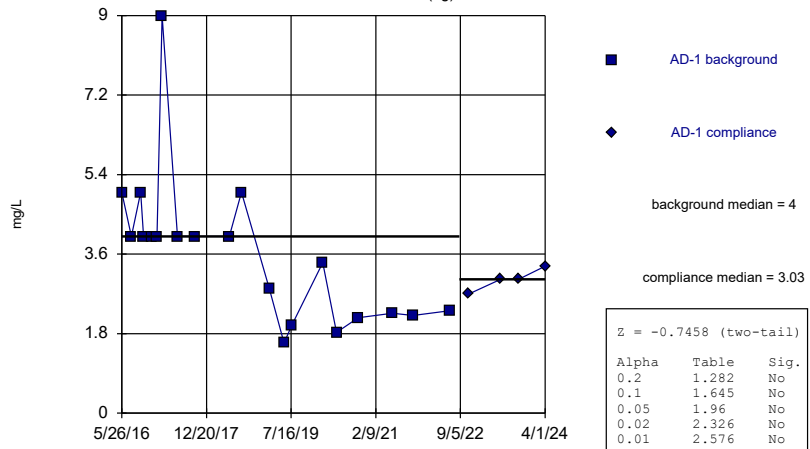
AD-5 (bg)



Constituent: Calcium, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

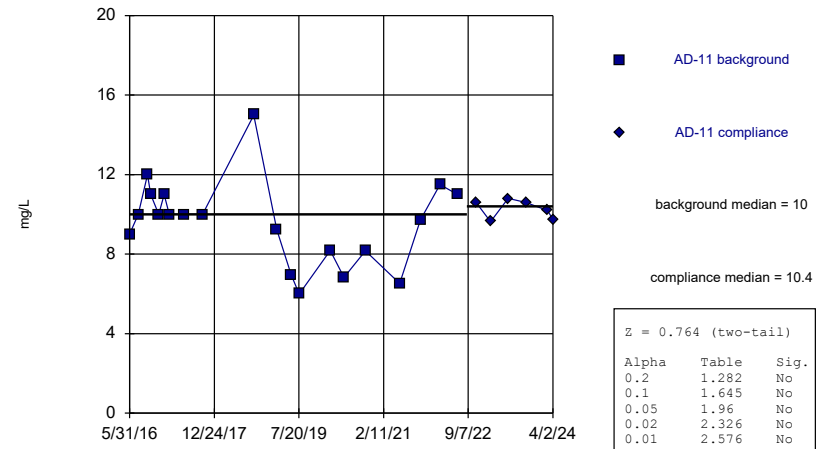
AD-1 (bg)



Constituent: Chloride, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

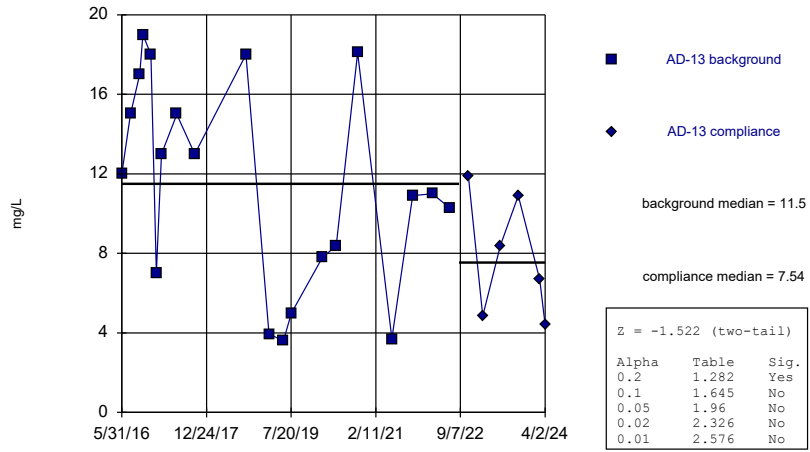
AD-11



Constituent: Chloride, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

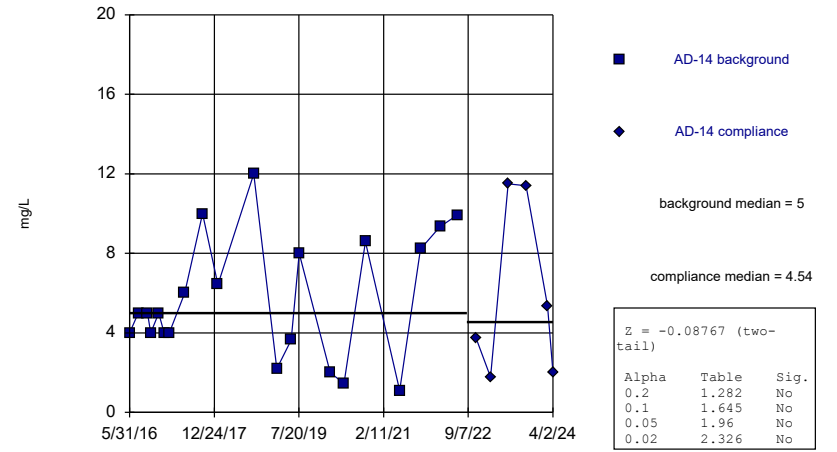
AD-13



Constituent: Chloride, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

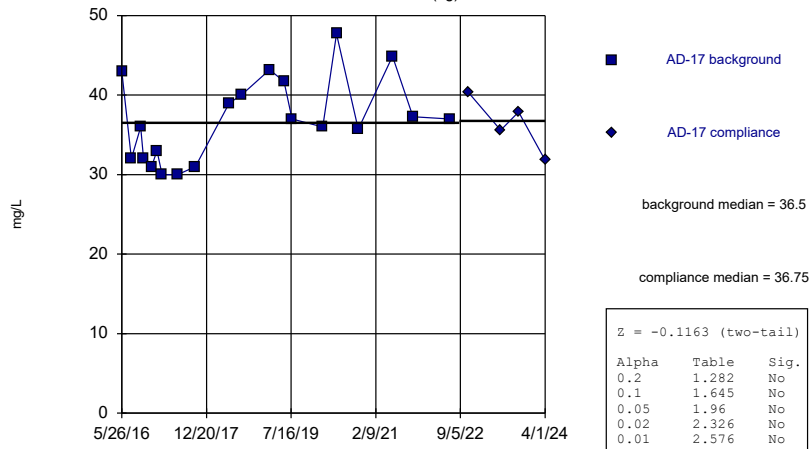
AD-14



Constituent: Chloride, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

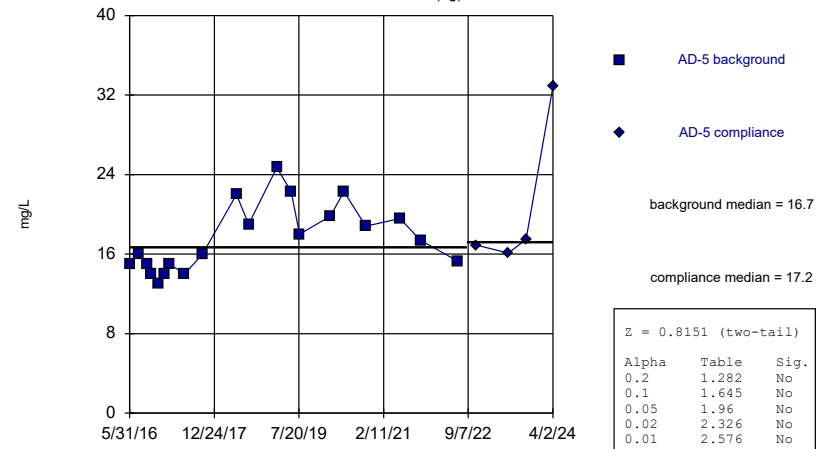
AD-17 (bg)



Constituent: Chloride, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

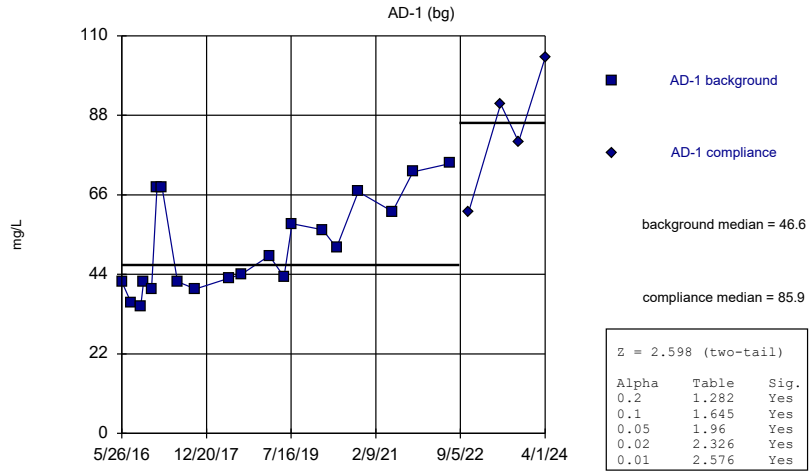
Mann-Whitney (Wilcoxon Rank Sum)

AD-5 (bg)



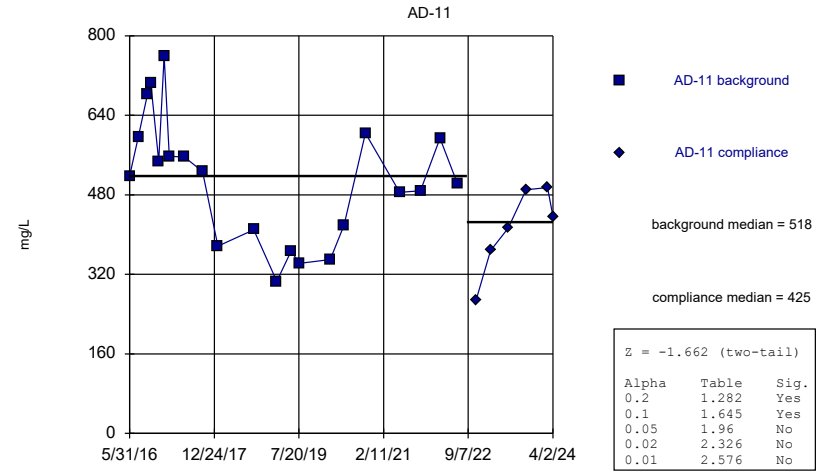
Constituent: Chloride, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)



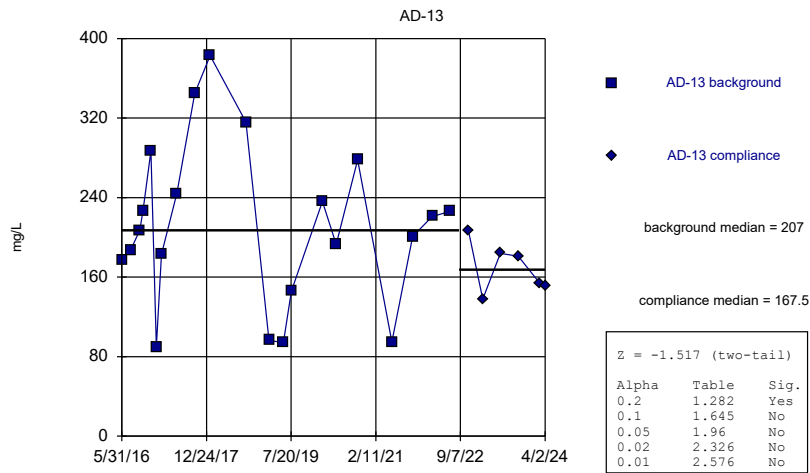
Constituent: Sulfate, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)



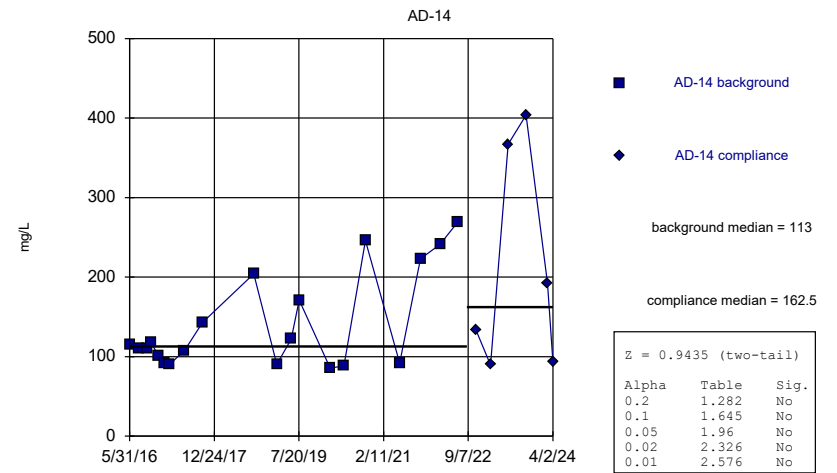
Constituent: Sulfate, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)



Constituent: Sulfate, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

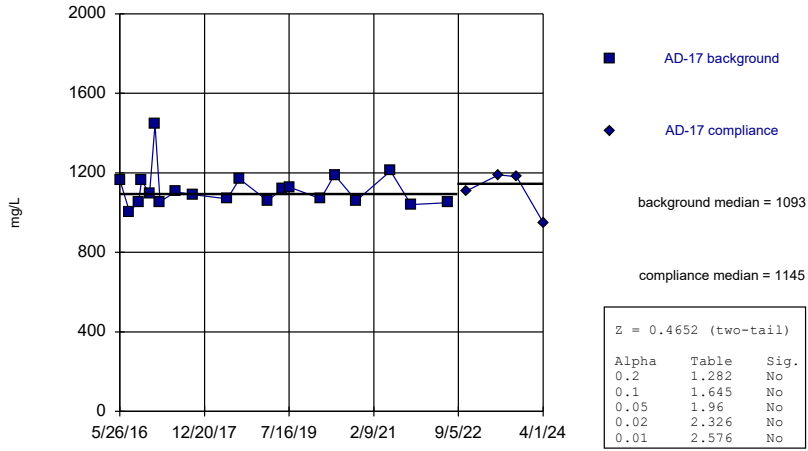
Mann-Whitney (Wilcoxon Rank Sum)



Constituent: Sulfate, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

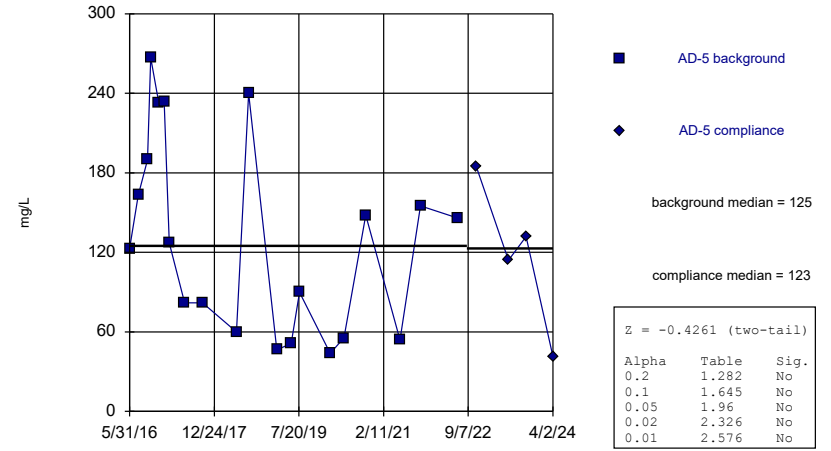
AD-17 (bg)



Constituent: Sulfate, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

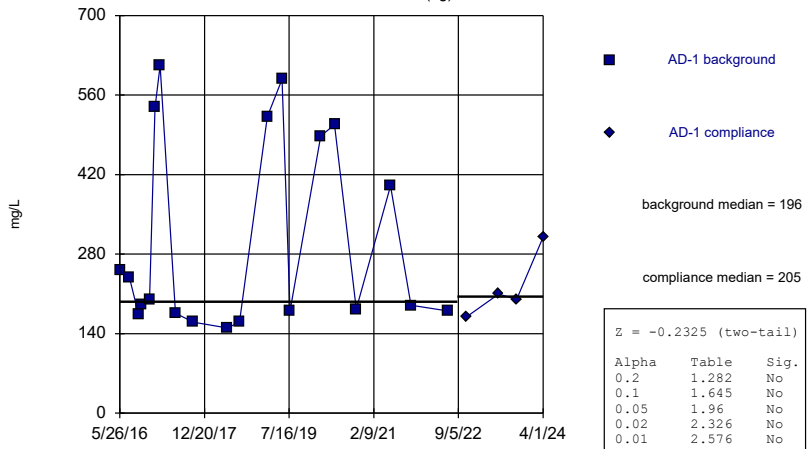
AD-5 (bg)



Constituent: Sulfate, total Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

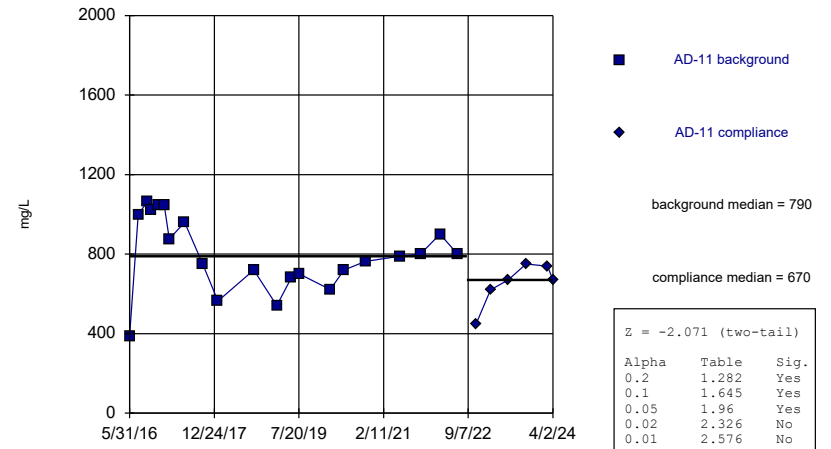
AD-1 (bg)



Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

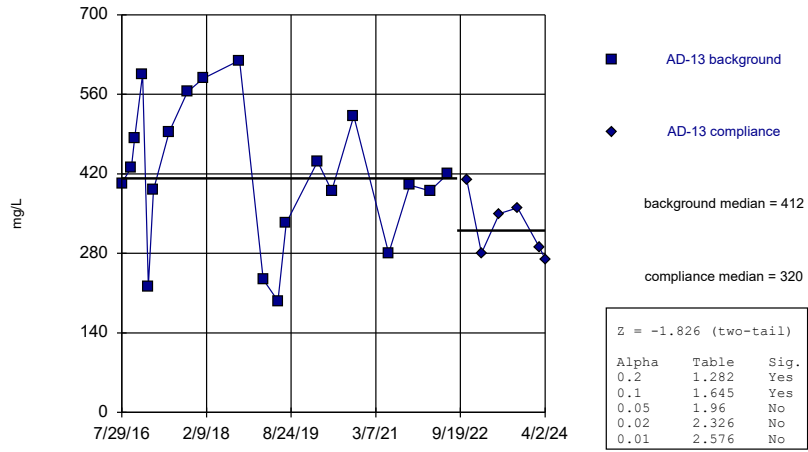
AD-11



Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

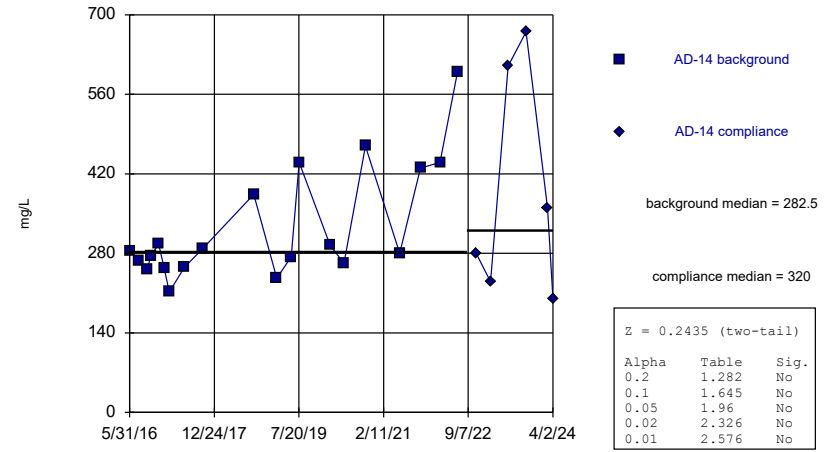
AD-13



Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

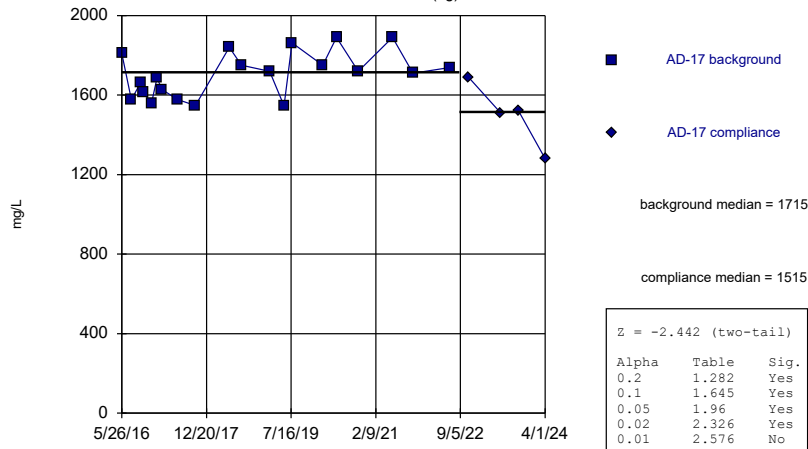
AD-14



Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

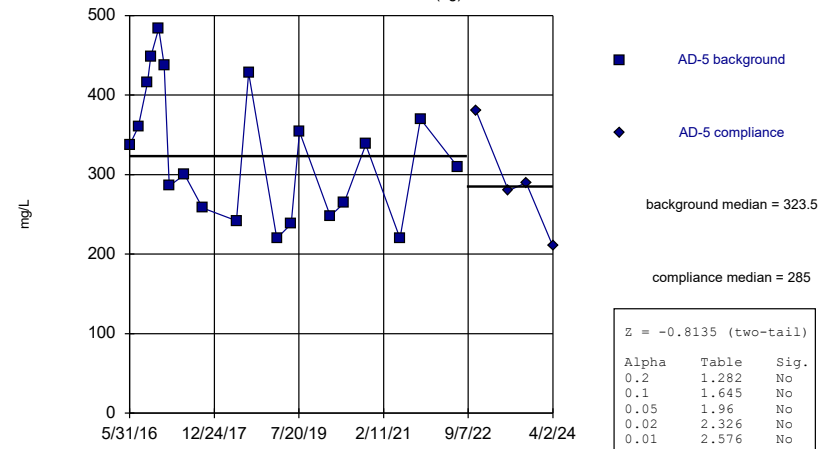
AD-17 (bg)



Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

Mann-Whitney (Wilcoxon Rank Sum)

AD-5 (bg)



Constituent: Total Dissolved Solids Analysis Run 11/16/2024 3:46 PM View: Mann-Whitney
Welsh Landfill Client: Geosyntec Data: Welsh LF

FIGURE E
Intrawell PLs

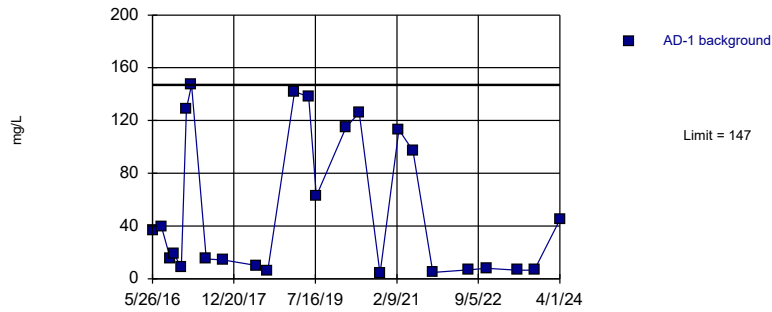
Intrawell Prediction Limits

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:11 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg	NBg	Mean	Std. Dev.	%NDs	ND Adj.	TransformAlpha	Method	
Calcium, total (mg/L)	AD-1	147	n/a	n/a	1 future	n/a	25	n/a	n/a	n/a	0	n/a	n/a	0.002832	NP Intra (normality) 1 of 2
Calcium, total (mg/L)	AD-11	21.98	n/a	n/a	1 future	n/a	28	2.187	0.3387	0	None		x ^(1/3)	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-13	33.89	n/a	n/a	1 future	n/a	28	2.13	0.7679	0	None		ln(x)	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-14	25.56	n/a	n/a	1 future	n/a	28	2.96	1.156	0	None		sqrt(x)	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-17	233.4	n/a	n/a	1 future	n/a	25	188.4	24.52	0	None		No	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-5	51.88	n/a	n/a	1 future	n/a	25	37.48	7.852	0	None		No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-1	6.459	n/a	n/a	1 future	n/a	24	1.841	0.3793	0	None		sqrt(x)	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-11	13.23	n/a	n/a	1 future	n/a	26	9.758	1.898	0	None		No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-13	19.76	n/a	n/a	1 future	n/a	26	10.65	4.985	0	None		No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-14	11.86	n/a	n/a	1 future	n/a	27	5.766	3.348	0	None		No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-17	45.95	n/a	n/a	1 future	n/a	24	36.8	4.96	0	None		No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-5	26.24	n/a	n/a	1 future	n/a	24	4.229	0.484	0	None		sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-1	90.85	n/a	n/a	1 future	n/a	24	57.11	18.28	0	None		No	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-11	711.7	n/a	n/a	1 future	n/a	27	487.7	123	0	None		No	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-13	337.6	n/a	n/a	1 future	n/a	27	201.7	74.63	0	None		No	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-14	404	n/a	n/a	1 future	n/a	26	n/a	n/a	0	n/a	n/a	n/a	0.002667	NP Intra (normality) 1 of 2
Sulfate, total (mg/L)	AD-17	1292	n/a	n/a	1 future	n/a	24	33.37	1.389	0	None		sqrt(x)	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-5	256.6	n/a	n/a	1 future	n/a	24	127.6	69.88	0	None		No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-1	612	n/a	n/a	1 future	n/a	24	n/a	n/a	0	n/a	n/a	n/a	0.003124	NP Intra (normality) 1 of 2
Total Dissolved Solids (mg/L)	AD-11	1094	n/a	n/a	1 future	n/a	27	765.1	180.7	0	None		No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-13	614.7	n/a	n/a	1 future	n/a	26	398.5	118.3	0	None		No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-14	590.7	n/a	n/a	1 future	n/a	26	5.772	0.3337	0	None		ln(x)	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-17	1935	n/a	n/a	1 future	n/a	24	1670	143.4	0	None		No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-5	470	n/a	n/a	1 future	n/a	24	321.6	80.41	0	None		No	0.002505	Param Intra 1 of 2

Prediction Limit

Intrawell Non-parametric, AD-1 (bg)

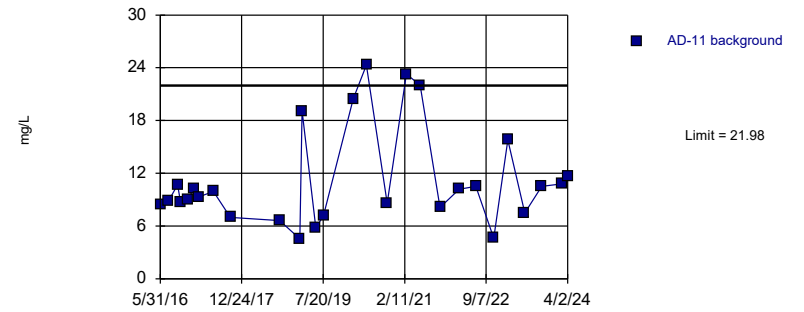


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 25 background values. Well-constituent pair annual alpha = 0.005656. Individual comparison alpha = 0.002832 (1 of 2). Assumes 1 future value.

Constituent: Calcium, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-11

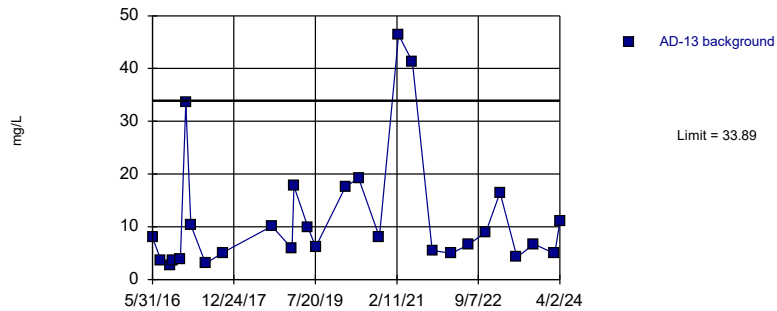


Background Data Summary (based on cube root transformation): Mean=2.187, Std. Dev.=0.3387, n=28. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9017, critical = 0.896. Kappa = 1.814 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

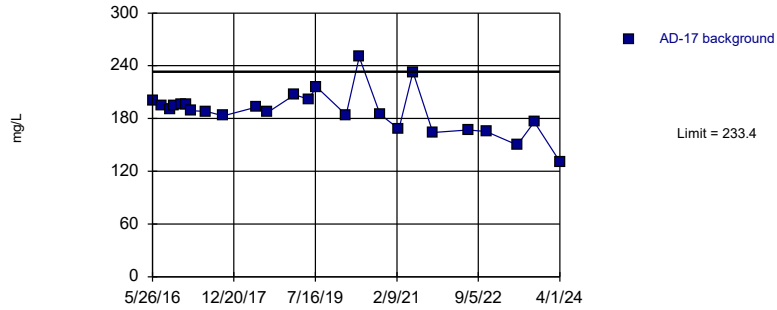
Constituent: Calcium, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-13



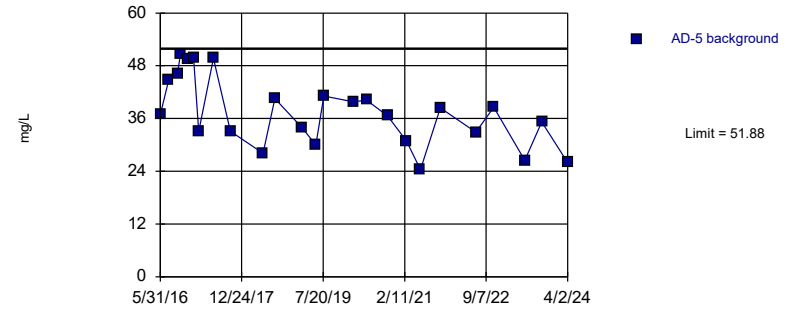
Prediction Limit
Intrawell Parametric, AD-17 (bg)



Background Data Summary: Mean=188.4, Std. Dev.=24.52, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9592, critical = 0.888. Kappa = 1.834 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

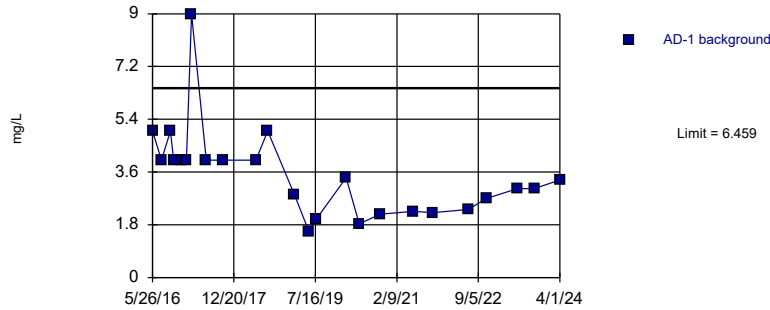
Prediction Limit
Intrawell Parametric, AD-5 (bg)



Background Data Summary: Mean=37.48, Std. Dev.=7.852, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.954, critical = 0.888. Kappa = 1.834 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

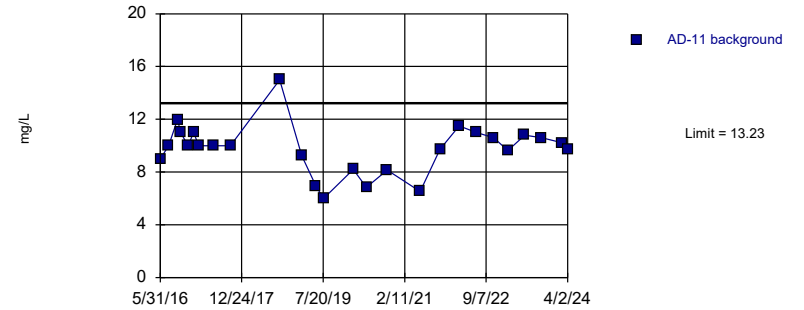
Prediction Limit
Intrawell Parametric, AD-1 (bg)



Background Data Summary (based on square root transformation): Mean=1.841, Std. Dev.=0.3793, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9139, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

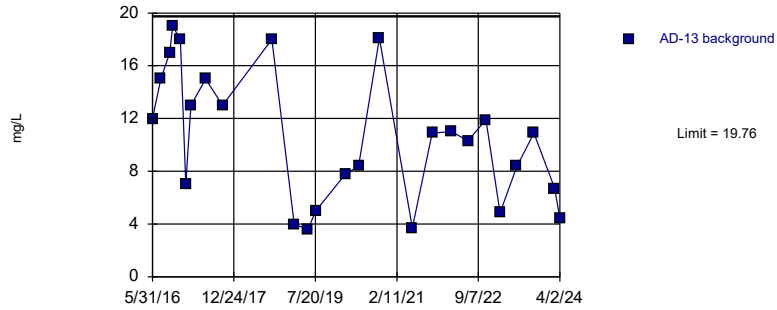
Prediction Limit
Intrawell Parametric, AD-11



Background Data Summary: Mean=9.758, Std. Dev.=1.898, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9319, critical = 0.891. Kappa = 1.827 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

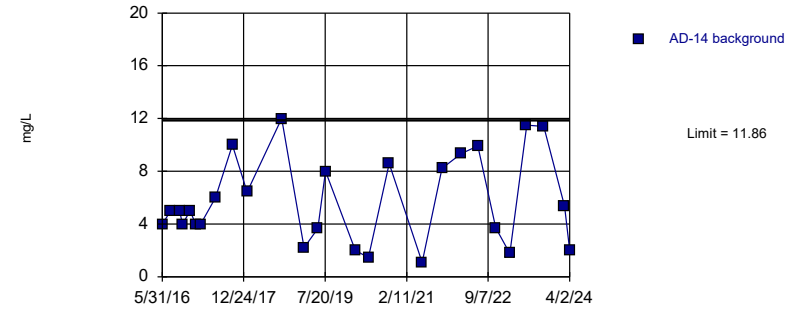
Prediction Limit
Intrawell Parametric, AD-13



Background Data Summary: Mean=10.65, Std. Dev.=4.985, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9334, critical = 0.891. Kappa = 1.827 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

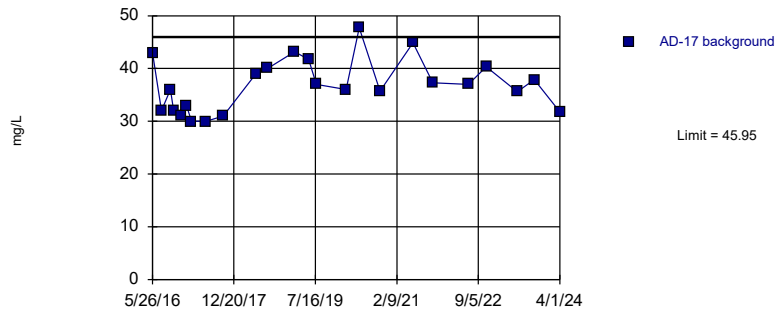
Prediction Limit
Intrawell Parametric, AD-14



Background Data Summary: Mean=5.766, Std. Dev.=3.348, n=27. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9242, critical = 0.894. Kappa = 1.82 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

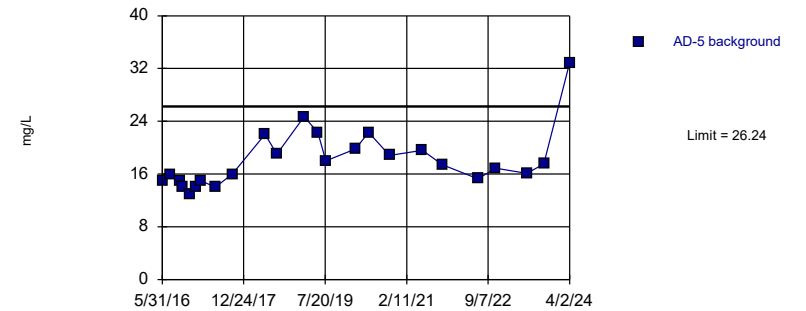
Prediction Limit
Intrawell Parametric, AD-17 (bg)



Background Data Summary: Mean=36.8, Std. Dev.=4.96, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9512, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit
Intrawell Parametric, AD-5 (bg)

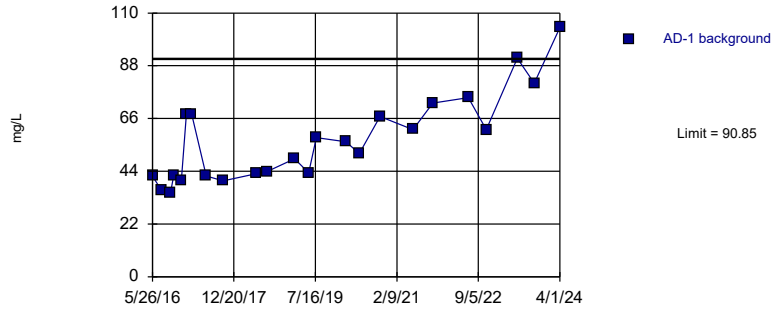


Background Data Summary (based on square root transformation): Mean=4.229, Std. Dev.=0.484, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8915, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-1 (bg)

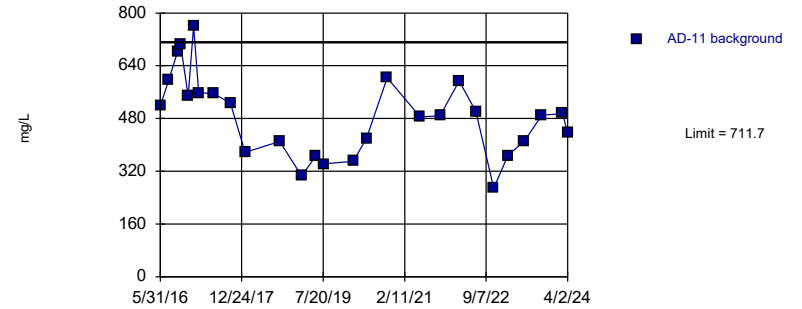


Background Data Summary: Mean=57.11, Std. Dev.=18.28, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9094, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-11

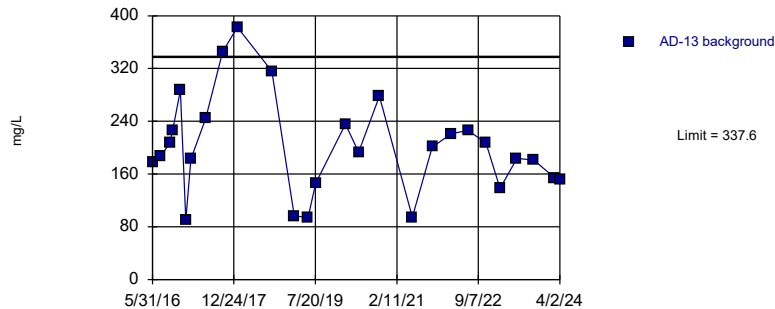


Background Data Summary: Mean=487.7, Std. Dev.=123, n=27. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9771, critical = 0.894. Kappa = 1.82 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-13

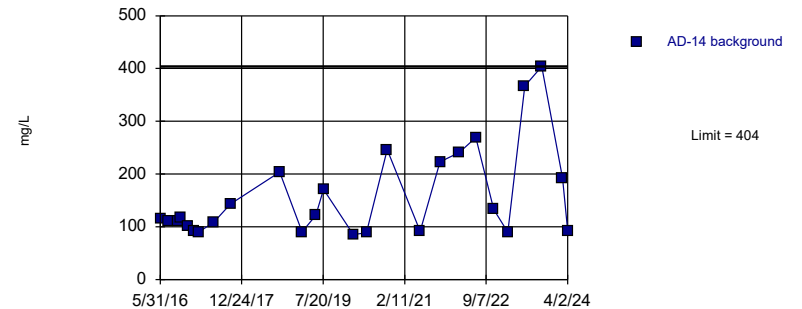


Background Data Summary: Mean=201.7, Std. Dev.=74.63, n=27. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9522, critical = 0.894. Kappa = 1.82 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Non-parametric, AD-14

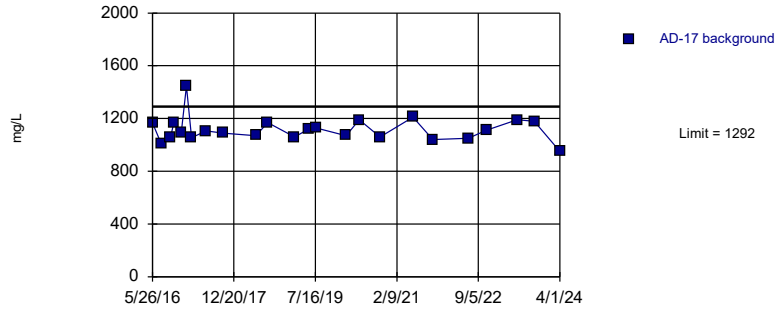


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 26 background values. Well-constituent pair annual alpha = 0.005327. Individual comparison alpha = 0.002667 (1 of 2). Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-17 (bg)

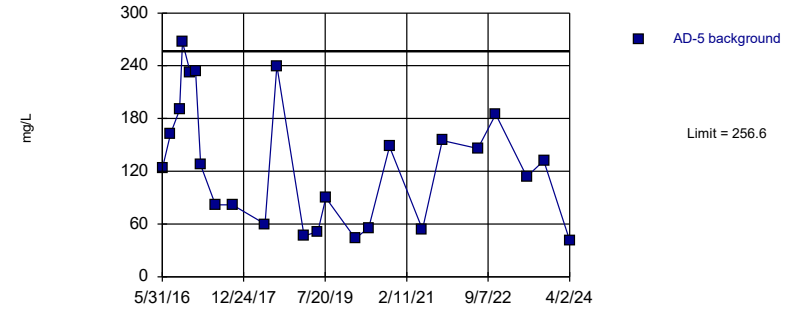


Background Data Summary (based on square root transformation): Mean=33.37, Std. Dev.=1.389, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8875, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Parametric, AD-5 (bg)

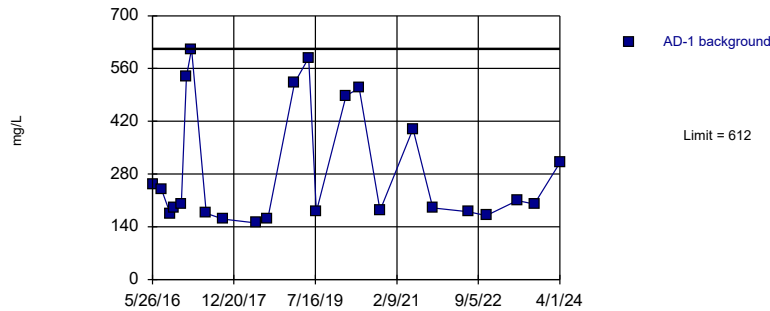


Background Data Summary: Mean=127.6, Std. Dev.=69.88, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9231, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

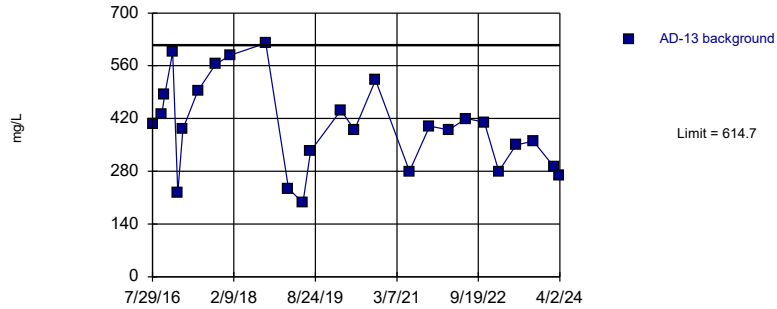
Constituent: Sulfate, total Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit

Intrawell Non-parametric, AD-1 (bg)



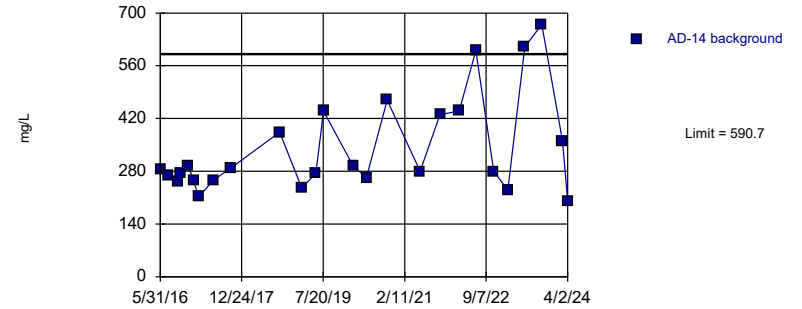
Prediction Limit Intrawell Parametric, AD-13



Background Data Summary: Mean=398.5, Std. Dev.=118.3, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9644, critical = 0.891. Kappa = 1.827 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit Intrawell Parametric, AD-14



Background Data Summary (based on natural log transformation): Mean=5.772, Std. Dev.=0.3337, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8946, critical = 0.891. Kappa = 1.827 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 11/16/2024 4:09 PM View: PLs Intrawell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit Intrawell Parametric, AD-17 (bg)

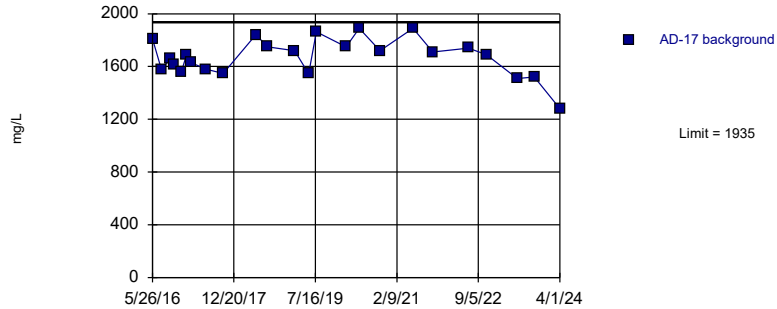


FIGURE F

Upgradient Trend Tests – Appendix III

Appendix III Trend Tests - Upgradient Wells - Significant Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:22 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Alpha</u>	<u>Method</u>
Boron, total (mg/L)	AD-1 (bg)	0.06405	201	118	Yes	26	0	n/a	0.01	NP
Fluoride, total (mg/L)	AD-1 (bg)	0.01229	120	118	Yes	26	42.31	n/a	0.01	NP
Fluoride, total (mg/L)	AD-17 (bg)	-0.01289	-119	-118	Yes	26	34.62	n/a	0.01	NP
pH, field (SU)	AD-17 (bg)	-0.09393	-164	-118	Yes	26	0	n/a	0.01	NP

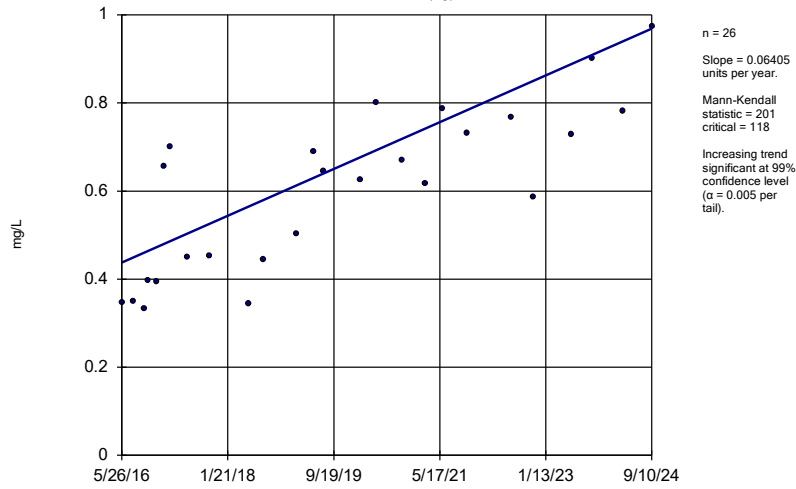
Appendix III Trend Tests - Upgradient Wells - All Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:22 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Alpha</u>	<u>Method</u>
Boron, total (mg/L)	AD-1 (bg)	0.06405	201	118	Yes	26	0	n/a	0.01	NP
Boron, total (mg/L)	AD-17 (bg)	-0.002722	-102	-118	No	26	0	n/a	0.01	NP
Boron, total (mg/L)	AD-5 (bg)	-0.0002883	-59	-118	No	26	0	n/a	0.01	NP
Fluoride, total (mg/L)	AD-1 (bg)	0.01229	120	118	Yes	26	42.31	n/a	0.01	NP
Fluoride, total (mg/L)	AD-17 (bg)	-0.01289	-119	-118	Yes	26	34.62	n/a	0.01	NP
Fluoride, total (mg/L)	AD-5 (bg)	0	18	118	No	26	34.62	n/a	0.01	NP
pH, field (SU)	AD-1 (bg)	-0.06035	-40	-118	No	26	0	n/a	0.01	NP
pH, field (SU)	AD-17 (bg)	-0.09393	-164	-118	Yes	26	0	n/a	0.01	NP
pH, field (SU)	AD-5 (bg)	0.03028	35	118	No	26	0	n/a	0.01	NP

Sen's Slope Estimator

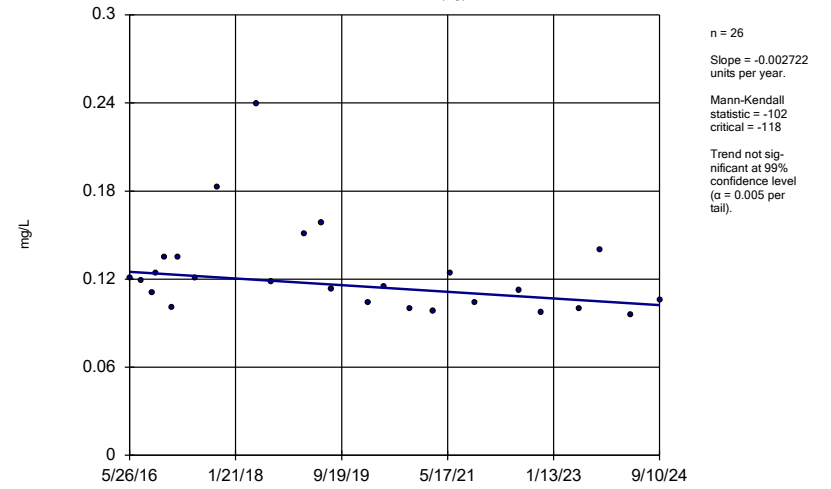
AD-1 (bg)



Constituent: Boron, total Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

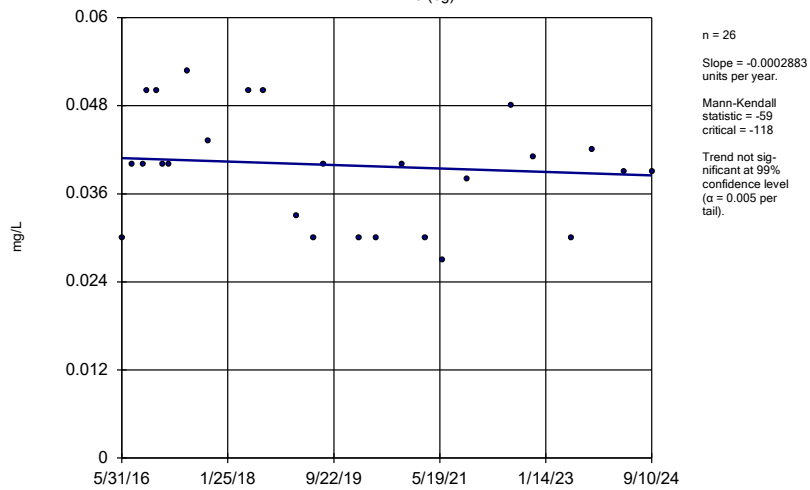
AD-17 (bg)



Constituent: Boron, total Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-5 (bg)

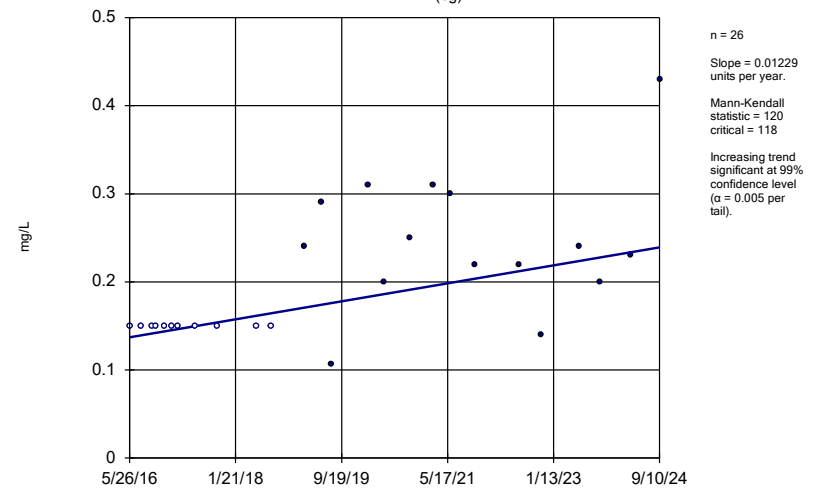


Constituent: Boron, total Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Hollow symbols indicate censored values.

Sen's Slope Estimator

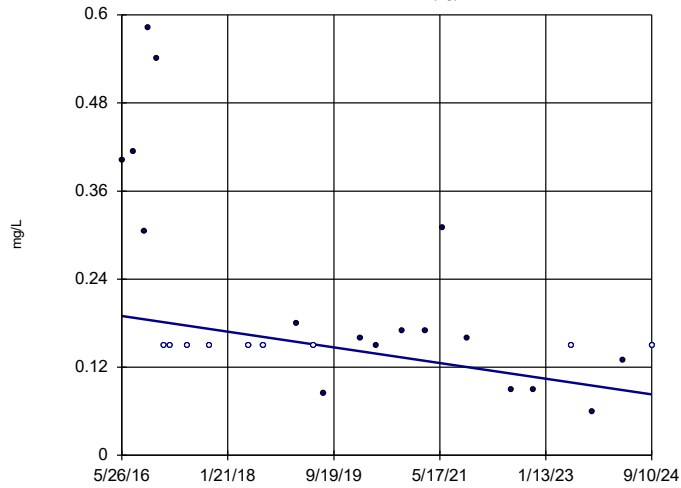
AD-1 (bg)



Constituent: Fluoride, total Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-17 (bg)

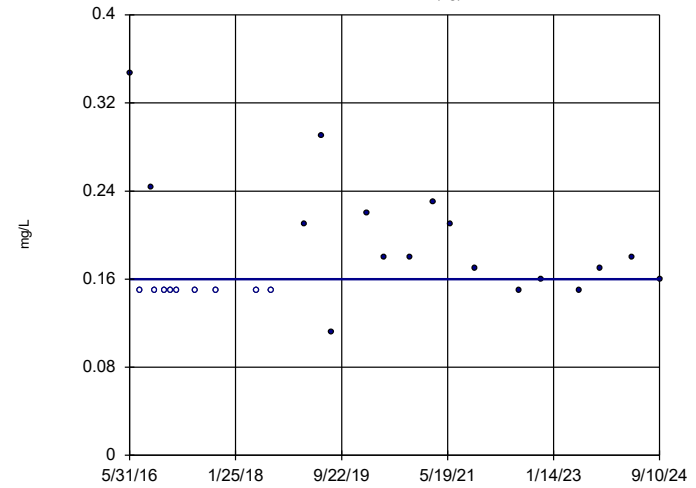


n = 26
Slope = -0.01289
units per year.
Mann-Kendall
statistic = -119
critical = -118
Decreasing trend
significant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Fluoride, total Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-5 (bg)

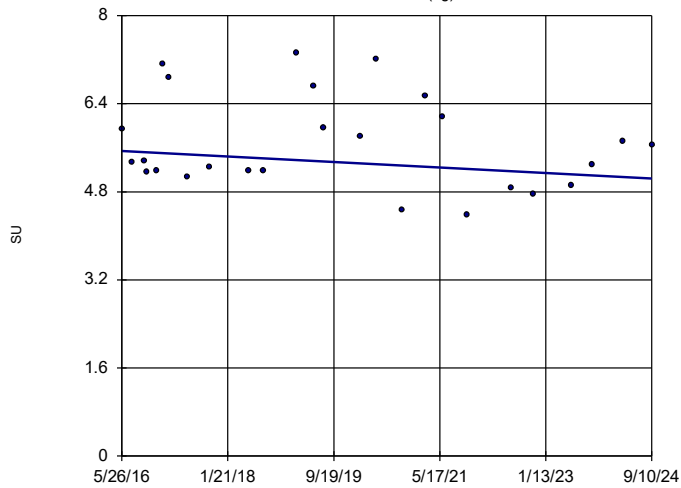


n = 26
Slope = 0
units per year.
Mann-Kendall
statistic = 18
critical = 118
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Fluoride, total Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-1 (bg)

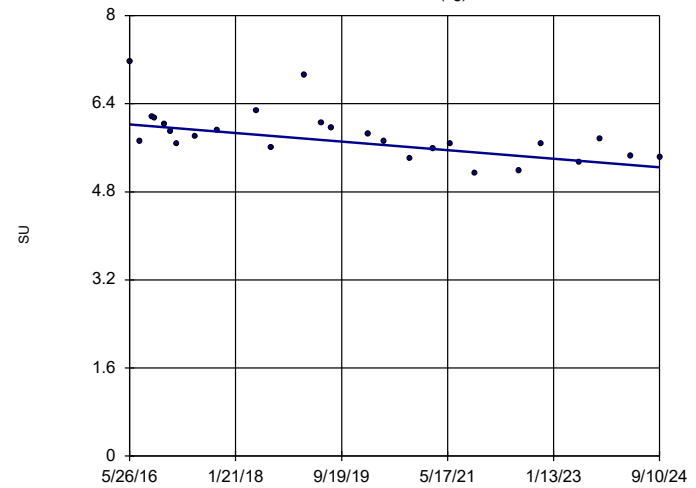


n = 26
Slope = -0.06035
units per year.
Mann-Kendall
statistic = -40
critical = -118
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: pH, field Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-17 (bg)

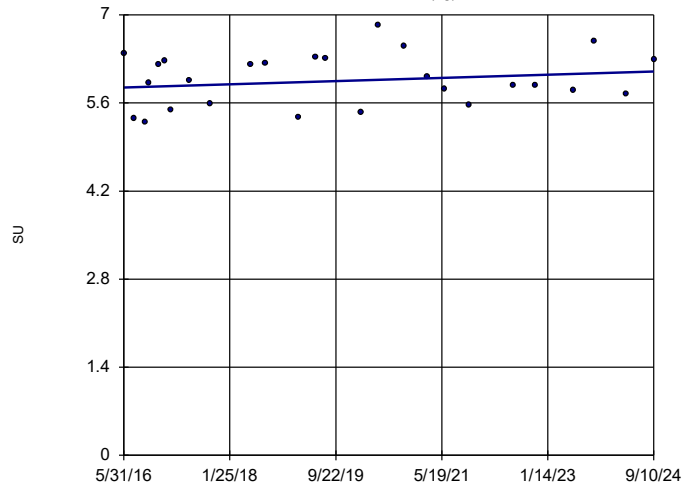


n = 26
Slope = -0.09393
units per year.
Mann-Kendall
statistic = -164
critical = -118
Decreasing trend
significant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: pH, field Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-5 (bg)



n = 26
Slope = 0.03028
units per year.
Mann-Kendall
statistic = 35
critical = 118
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: pH, field Analysis Run 11/16/2024 4:21 PM View: Trend Tests - Upgradient
Welsh Landfill Client: Geosyntec Data: Welsh LF

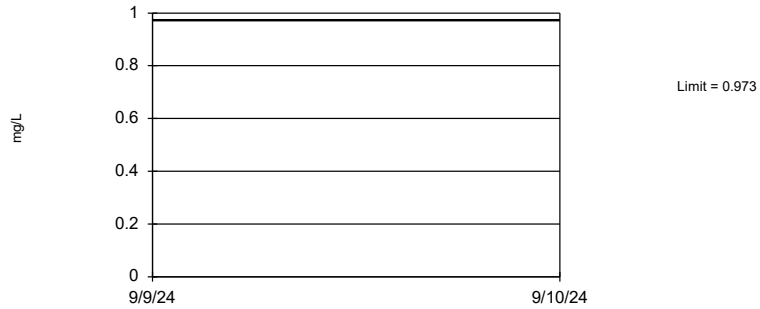
FIGURE G
Interwell PLs

Interwell Prediction Limits

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:21 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg</u>	<u>NBg</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>TransformAlpha</u>	<u>Method</u>
Boron, total (mg/L)	n/a	0.973	n/a	n/a	3 future	n/a	78	n/a	n/a	n/a	0	n/a	n/a	0.0003178 NP Inter (normality) 1 of 2
Fluoride, total (mg/L)	n/a	0.583	n/a	n/a	3 future	n/a	78	n/a	n/a	n/a	37.18	n/a	n/a	0.0003178 NP Inter (normality) 1 of 2
pH, field (SU)	n/a	6.862	4.786	n/a	3 future	n/a	78	5.824	0.6133	0	None	No	0.001253	Param Inter 1 of 2

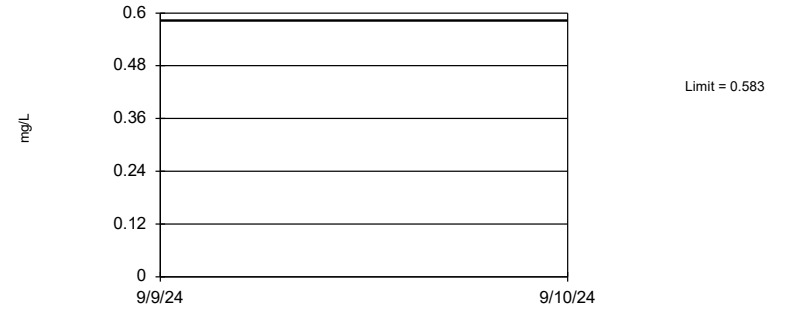
Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 78 background values. Annual per-constituent alpha = 0.001905. Individual comparison alpha = 0.0003178 (1 of 2). Assumes 3 future values.

Constituent: Boron, total Analysis Run 11/16/2024 4:20 PM View: PLs Interwell
Welsh Landfill Client: Geosyntec Data: Welsh LF

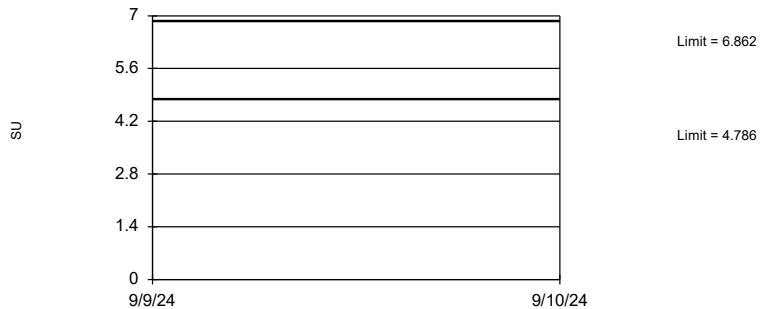
Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 78 background values. 37.18% NDs. Annual per-constituent alpha = 0.001905. Individual comparison alpha = 0.0003178 (1 of 2). Assumes 3 future values.

Constituent: Fluoride, total Analysis Run 11/16/2024 4:20 PM View: PLs Interwell
Welsh Landfill Client: Geosyntec Data: Welsh LF

Prediction Limit
Interwell Parametric



Background Data Summary: Mean=5.824, Std. Dev.=0.6133, n=78. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9827, critical = 0.957. Kappa = 1.693 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001253. Assumes 3 future values.

Constituent: pH, field Analysis Run 11/16/2024 4:20 PM View: PLs Interwell
Welsh Landfill Client: Geosyntec Data: Welsh LF

FIGURE H

Upgradient Trend Tests – Appendix IV

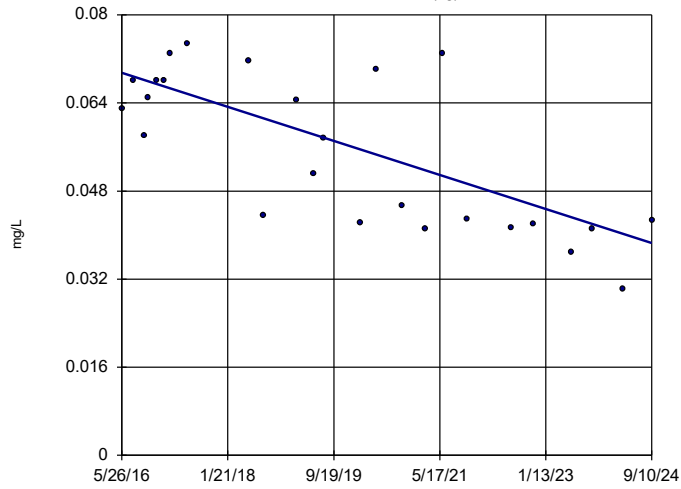
Appendix IV Trend Tests - Upgradient Wells - All/Significant Results

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:29 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Alpha</u>	<u>Method</u>
Cobalt, total (mg/L)	AD-17 (bg)	-0.003727	-145	-85	Yes	25	0	n/a	0.05	NP
Lithium, total (mg/L)	AD-17 (bg)	-0.01509	-170	-85	Yes	25	0	n/a	0.05	NP
Lithium, total (mg/L)	AD-5 (bg)	-0.008488	-88	-85	Yes	25	0	n/a	0.05	NP

Sen's Slope Estimator

AD-17 (bg)

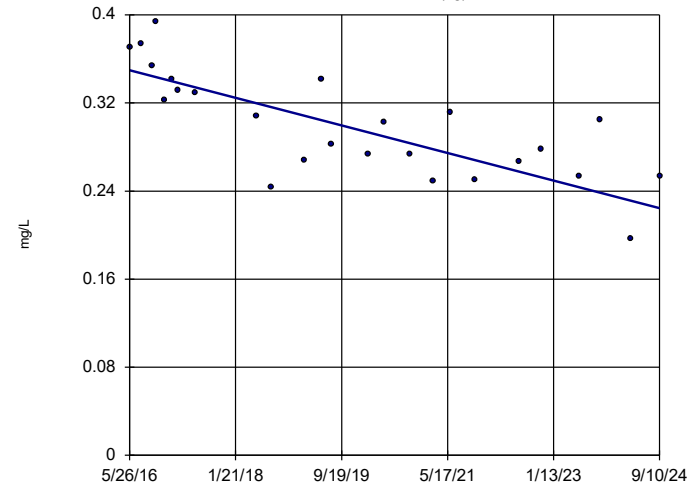


n = 25
 Slope = -0.003727
 units per year.
 Mann-Kendall
 statistic = -145
 critical = -85
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Constituent: Cobalt, total Analysis Run 11/16/2024 4:28 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-17 (bg)

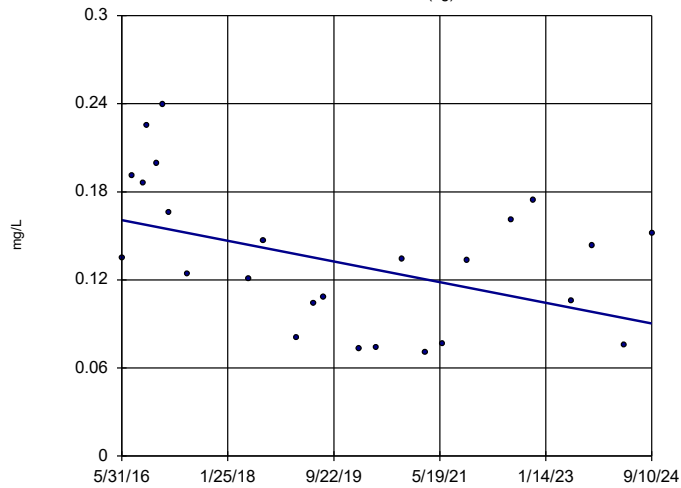


n = 25
 Slope = -0.01509
 units per year.
 Mann-Kendall
 statistic = -170
 critical = -85
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Constituent: Lithium, total Analysis Run 11/16/2024 4:28 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Sen's Slope Estimator

AD-5 (bg)



n = 25
 Slope = -0.008488
 units per year.
 Mann-Kendall
 statistic = -88
 critical = -85
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Constituent: Lithium, total Analysis Run 11/16/2024 4:28 PM View: Trend Tests - Upgradient
 Welsh Landfill Client: Geosyntec Data: Welsh LF

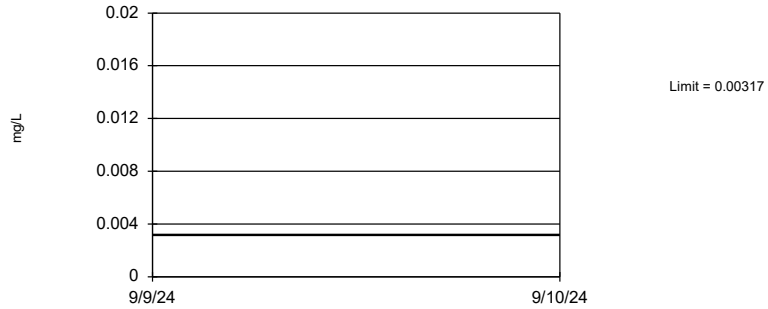
FIGURE I
UTLs

Upper Tolerance Limits

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/16/2024, 4:32 PM

<u>Constituent</u>	<u>Upper Lim.</u>	<u>Bg N</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony, total (mg/L)	0.00317	75	n/a	n/a	64	n/a	n/a	0.02134	NP Inter(NDs)
Arsenic, total (mg/L)	0.00628	75	n/a	n/a	25.33	n/a	n/a	0.02134	NP Inter(normality)
Barium, total (mg/L)	0.512	75	n/a	n/a	0	n/a	n/a	0.02134	NP Inter(normality)
Beryllium, total (mg/L)	0.0022	75	n/a	n/a	8	n/a	n/a	0.02134	NP Inter(normality)
Cadmium, total (mg/L)	0.004	73	n/a	n/a	32.88	n/a	n/a	0.02365	NP Inter(normality)
Chromium, total (mg/L)	0.005	74	n/a	n/a	12.16	n/a	n/a	0.02247	NP Inter(normality)
Cobalt, total (mg/L)	0.0748	75	n/a	n/a	0	n/a	n/a	0.02134	NP Inter(normality)
Combined Radium 226 + 228 (pCi/L)	4.718	75	1.477	0.3523	0	None	sqrt(x)	0.05	Inter
Fluoride, total (mg/L)	0.583	78	n/a	n/a	37.18	n/a	n/a	0.0183	NP Inter(normality)
Lead, total (mg/L)	0.0011	73	n/a	n/a	49.32	n/a	n/a	0.02365	NP Inter(normality)
Lithium, total (mg/L)	0.394	75	n/a	n/a	1.333	n/a	n/a	0.02134	NP Inter(normality)
Mercury, total (mg/L)	0.000033	75	n/a	n/a	60	n/a	n/a	0.02134	NP Inter(NDs)
Molybdenum, total (mg/L)	0.00243	74	n/a	n/a	70.27	n/a	n/a	0.02247	NP Inter(NDs)
Selenium, total (mg/L)	0.0113	75	n/a	n/a	36	n/a	n/a	0.02134	NP Inter(normality)
Thallium, total (mg/L)	0.001251	75	n/a	n/a	84	n/a	n/a	0.02134	NP Inter(NDs)

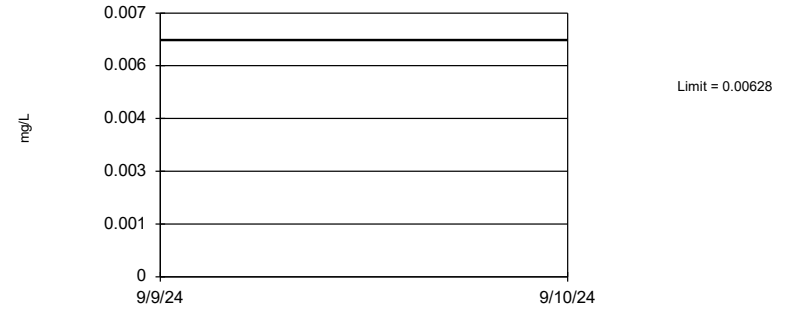
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 75 background values. 64% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Antimony, total Analysis Run 11/16/2024 4:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

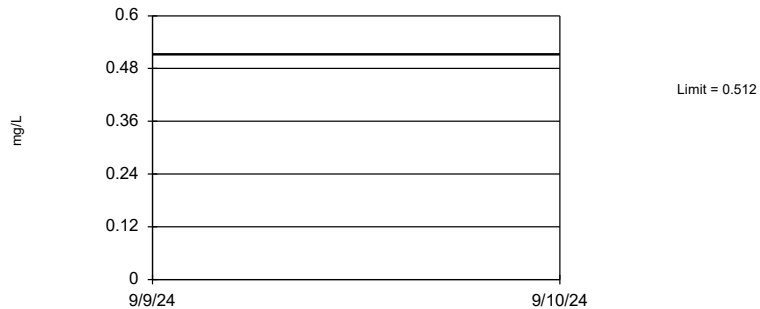
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. 25.33% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Arsenic, total Analysis Run 11/16/2024 4:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

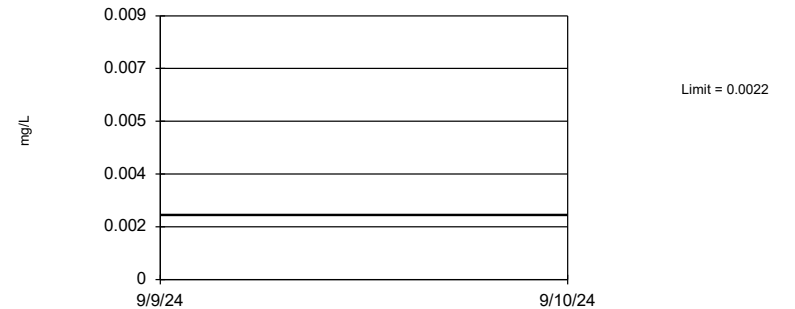
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Barium, total Analysis Run 11/16/2024 4:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

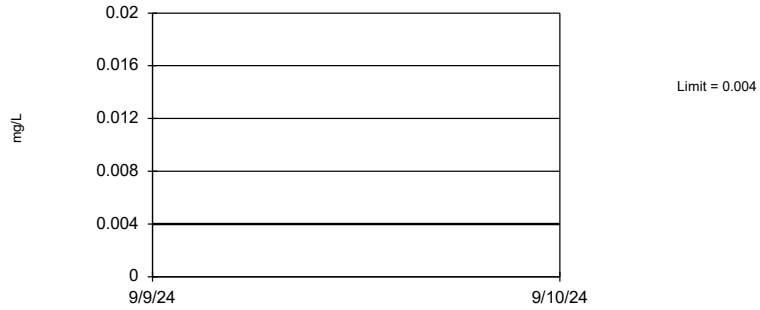
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. 8% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Beryllium, total Analysis Run 11/16/2024 4:29 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tolerance Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 73 background values. 32.88% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02365.

Constituent: Cadmium, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

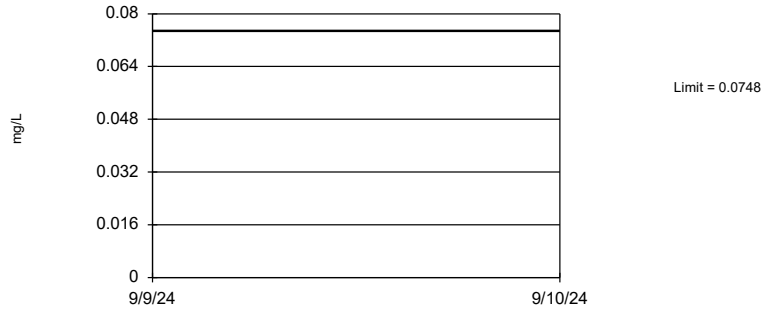
Tolerance Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 74 background values. 12.16% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02247.

Constituent: Chromium, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

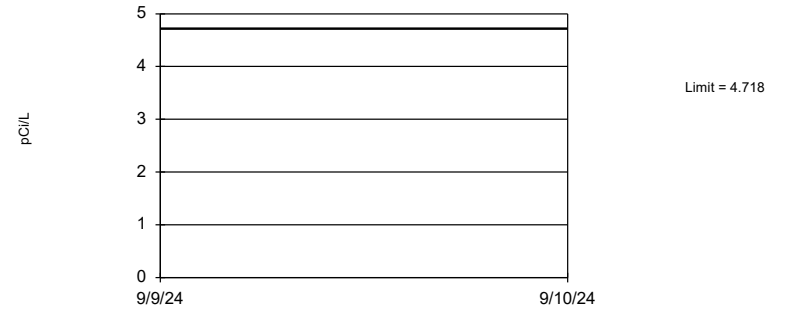
Tolerance Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Cobalt, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

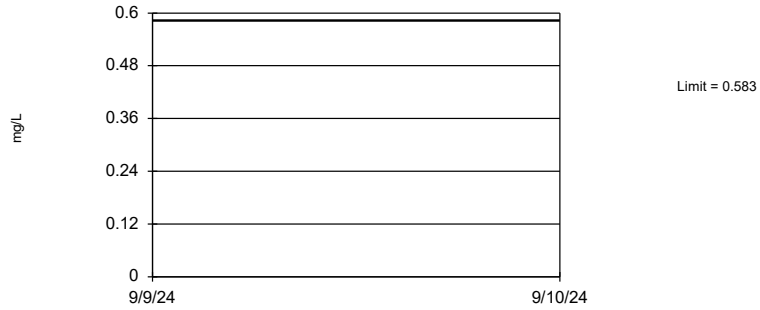
Tolerance Limit
Interwell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=1.477, Std. Dev.=0.3523, n=75. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9655, critical = 0.956. Report alpha = 0.05.

Constituent: Combined Radium 226 + 228 Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

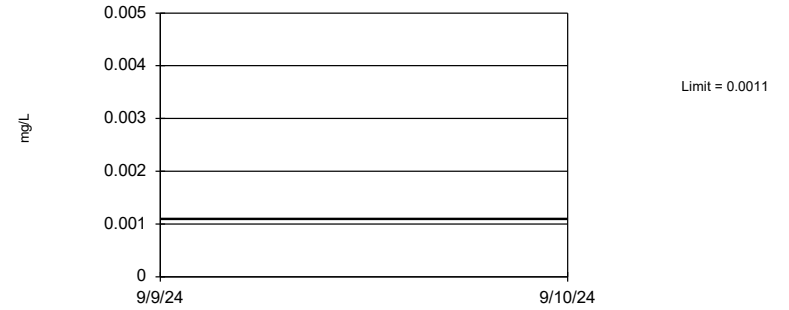
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 78 background values. 37.18% NDs. 94.34% coverage at alpha=0.01; 96.29% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.0183.

Constituent: Fluoride, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 73 background values. 49.32% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02365.

Constituent: Lead, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

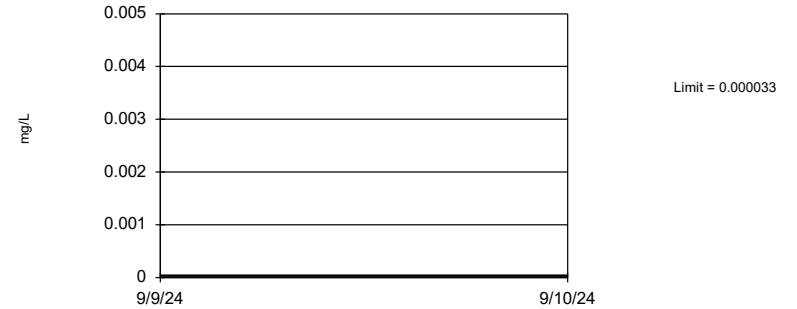
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. 1.333% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Lithium, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

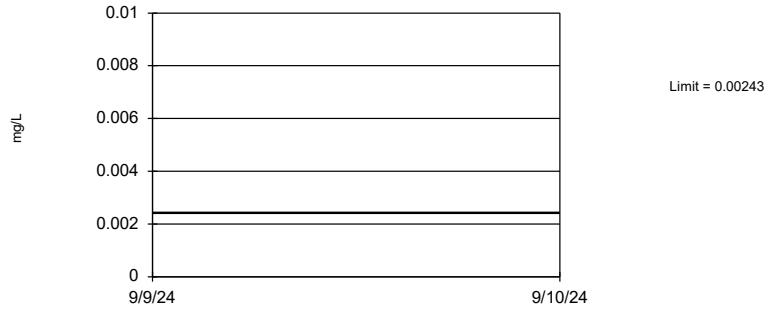
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 75 background values. 60% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Mercury, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

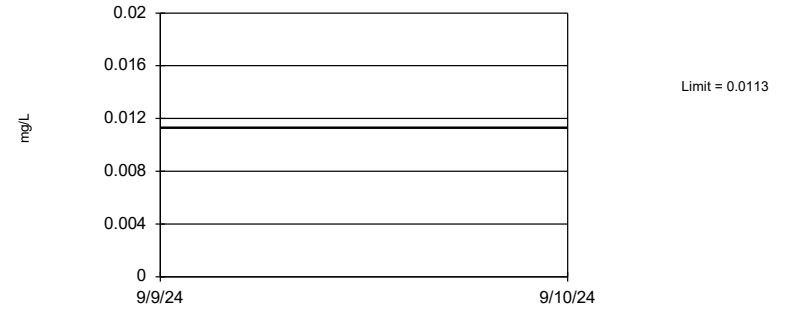
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 74 background values. 70.27% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02247.

Constituent: Molybdenum, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

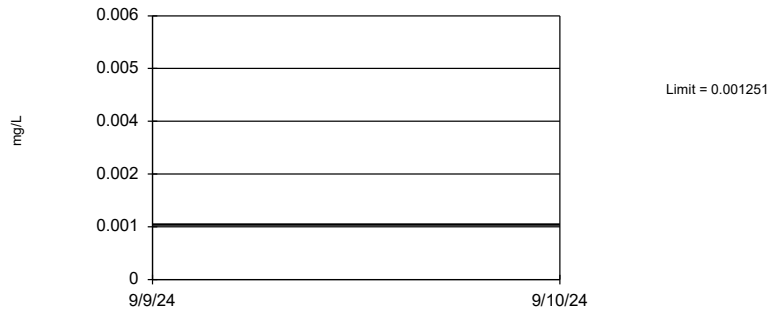
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. 36% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Selenium, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 75 background values. 84% NDs. 93.95% coverage at alpha=0.01; 95.9% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.02134.

Constituent: Thallium, total Analysis Run 11/16/2024 4:30 PM View: UTLs
Welsh Landfill Client: Geosyntec Data: Welsh LF

FIGURE J
GWPS

WELSH LANDFILL GWPS			
Constituent Name	MCL	Background Limit	GWPS
Antimony, Total (mg/L)	0.006	0.00317	0.006
Arsenic, Total (mg/L)	0.01	0.00628	0.01
Barium, Total (mg/L)	2	0.512	2
Beryllium, Total (mg/L)	0.004	0.0022	0.004
Cadmium, Total (mg/L)	0.005	0.004	0.005
Chromium, Total (mg/L)	0.1	0.005	0.1
Cobalt, Total (mg/L)	n/a	0.0748	0.0748
Combined Radium, Total (pCi/L)	5	4.72	5
Fluoride, Total (mg/L)	4	0.58	4
Lead, Total (mg/L)	n/a	0.0011	0.0011
Lithium, Total (mg/L)	n/a	0.394	0.394
Mercury, Total (mg/L)	0.002	0.000033	0.002
Molybdenum, Total (mg/L)	n/a	0.00243	0.00243
Selenium, Total (mg/L)	0.05	0.0113	0.05
Thallium, Total (mg/L)	0.002	0.00125	0.002

**MCL = Maximum Contaminant Level*

**GWPS = Groundwater Protection Standard*

FIGURE K
Confidence Intervals

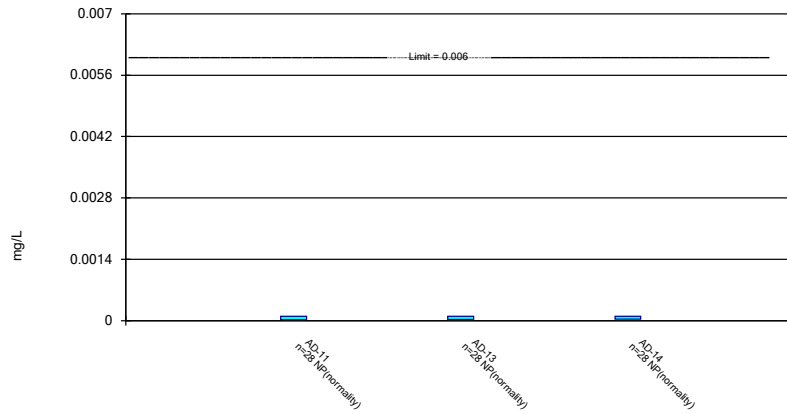
Confidence Interval Summary Table - All Results (No Significant)

Welsh Landfill Client: Geosyntec Data: Welsh LF Printed 11/19/2024, 4:35 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig. N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	AD-11	0.0001	0.000021	0.006	No 28	0.00006196	0.0000392	50	None	No	0.01	NP (normality)
Antimony, total (mg/L)	AD-13	0.0001	0.000028	0.006	No 28	0.0001173	0.0002793	46.43	None	No	0.01	NP (normality)
Antimony, total (mg/L)	AD-14	0.0001	0.00003	0.006	No 28	0.00006564	0.00003703	50	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-11	0.001773	0.00059	0.01	No 28	0.001724	0.001799	21.43	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-13	0.003695	0.00038	0.01	No 28	0.001991	0.002125	25	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-14	0.001894	0.00039	0.01	No 28	0.001683	0.001985	25	None	No	0.01	NP (normality)
Barium, total (mg/L)	AD-11	0.02	0.0127	2	No 28	0.02086	0.01319	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	AD-13	0.05278	0.0274	2	No 28	0.04361	0.03061	0	None	sqrt(x)	0.01	Param.
Barium, total (mg/L)	AD-14	0.04089	0.02887	2	No 28	0.03577	0.0139	0	None	sqrt(x)	0.01	Param.
Beryllium, total (mg/L)	AD-11	0.002408	0.001231	0.004	No 28	0.002052	0.001444	0	None	x^(1/3)	0.01	Param.
Beryllium, total (mg/L)	AD-13	0.0007135	0.0004641	0.004	No 28	0.0005888	0.0002668	0	None	No	0.01	Param.
Beryllium, total (mg/L)	AD-14	0.0009863	0.0004797	0.004	No 28	0.0008453	0.000703	0	None	x^(1/3)	0.01	Param.
Cadmium, total (mg/L)	AD-11	0.000381	0.0002817	0.005	No 28	0.0003314	0.0001063	0	None	No	0.01	Param.
Cadmium, total (mg/L)	AD-13	0.0001858	0.00009259	0.005	No 28	0.0001734	0.0001465	14.29	None	ln(x)	0.01	Param.
Cadmium, total (mg/L)	AD-14	0.002034	0.0007474	0.005	No 28	0.00166	0.001666	0	None	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	AD-11	0.00066	0.0003652	0.1	No 28	0.0008948	0.001351	0	None	No	0.01	NP (normality)
Chromium, total (mg/L)	AD-13	0.00057	0.00034	0.1	No 28	0.0008106	0.001394	10.71	None	No	0.01	NP (normality)
Chromium, total (mg/L)	AD-14	0.0006706	0.0004199	0.1	No 28	0.0005452	0.0002682	7.143	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-11	0.01996	0.01368	0.0748	No 28	0.01682	0.006721	0	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-13	0.006434	0.003907	0.0748	No 28	0.00517	0.002703	0	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-14	0.01635	0.007086	0.0748	No 28	0.01405	0.01242	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-11	2.993	1.935	5	No 28	2.603	1.339	0	None	x^(1/3)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-13	2.814	1.983	5	No 28	2.398	0.8889	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-14	2.859	1.476	5	No 28	2.361	1.775	0	None	sqrt(x)	0.01	Param.
Fluoride, total (mg/L)	AD-11	1.069	0.4914	4	No 28	0.8746	0.6625	10.71	None	sqrt(x)	0.01	Param.
Fluoride, total (mg/L)	AD-13	0.5248	0.2781	4	No 29	0.4015	0.2692	10.34	None	No	0.01	Param.
Fluoride, total (mg/L)	AD-14	0.23	0.15	4	No 29	0.2059	0.0916	37.93	None	No	0.01	NP (normality)
Lead, total (mg/L)	AD-11	0.001037	0.0004799	0.0011	No 28	0.000921	0.0008061	25	Kaplan-Meier	x^(1/3)	0.01	Param.
Lead, total (mg/L)	AD-13	0.0002788	0.00009499	0.0011	No 28	0.0003786	0.0005296	25	Kaplan-Meier	ln(x)	0.01	Param.
Lead, total (mg/L)	AD-14	0.0002396	0.0001223	0.0011	No 28	0.0002446	0.0001575	32.14	Kaplan-Meier	x^(1/3)	0.01	Param.
Lithium, total (mg/L)	AD-11	0.03182	0.02123	0.394	No 28	0.02653	0.01134	0	None	No	0.01	Param.
Lithium, total (mg/L)	AD-13	0.03087	0.01592	0.394	No 28	0.0234	0.01599	0	None	No	0.01	Param.
Lithium, total (mg/L)	AD-14	0.01677	0.01182	0.394	No 28	0.01429	0.005295	0	None	No	0.01	Param.
Mercury, total (mg/L)	AD-11	0.000019240	0.00000624	0.002	No 28	0.00001285	0.000007763	21.43	None	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-13	0.000005150	0.000004	0.002	No 28	0.0000067320	0.000006514	42.86	None	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-14	0.000332	0.00002	0.002	No 28	0.0001788	0.0002043	17.86	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	AD-11	0.001519	0.0002	0.00243	No 28	0.0005489	0.0003689	82.14	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-13	0.0008705	0.0003533	0.00243	No 28	0.000583	0.0005714	53.57	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-14	0.0006	0.000497	0.00243	No 28	0.0005438	0.0003207	75	None	No	0.01	NP (NDs)
Selenium, total (mg/L)	AD-11	0.00182	0.001149	0.05	No 28	0.001484	0.0007175	14.29	None	No	0.01	Param.
Selenium, total (mg/L)	AD-13	0.0008132	0.0004481	0.05	No 28	0.0007399	0.0005039	10.71	None	ln(x)	0.01	Param.
Selenium, total (mg/L)	AD-14	0.002878	0.001955	0.05	No 28	0.002417	0.0009877	7.143	None	No	0.01	Param.
Thallium, total (mg/L)	AD-11	0.001231	0.00014	0.002	No 27	0.000614	0.0007521	18.52	None	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-13	0.0002	0.00016	0.002	No 28	0.0002047	0.0001586	50	None	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-14	0.0005	0.000242	0.002	No 28	0.0003465	0.0001743	46.43	None	No	0.01	NP (normality)

Non-Parametric Confidence Interval

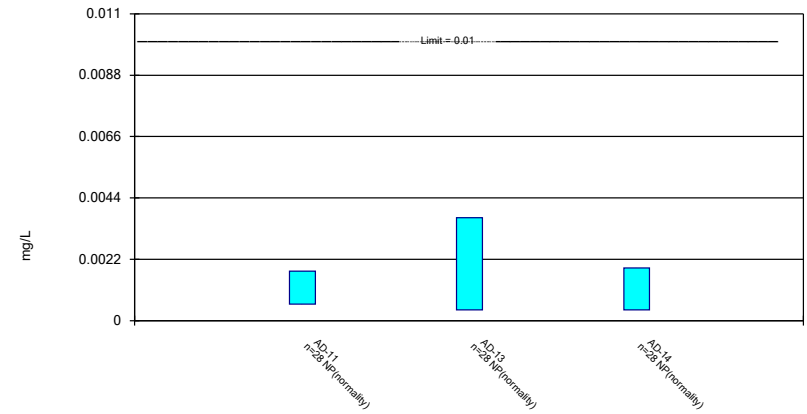
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Antimony, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

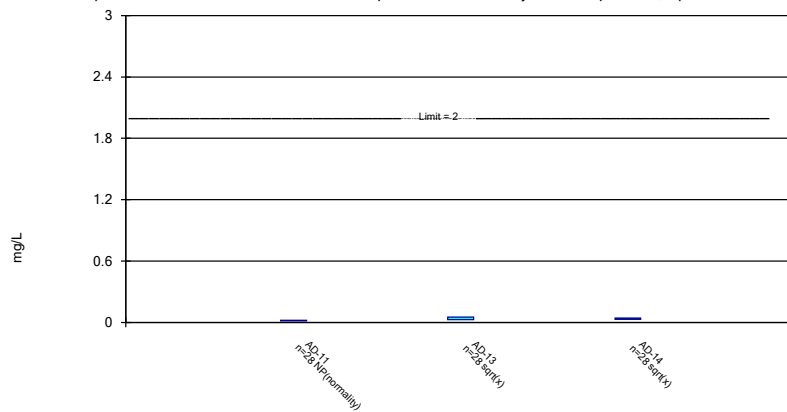
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Arsenic, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

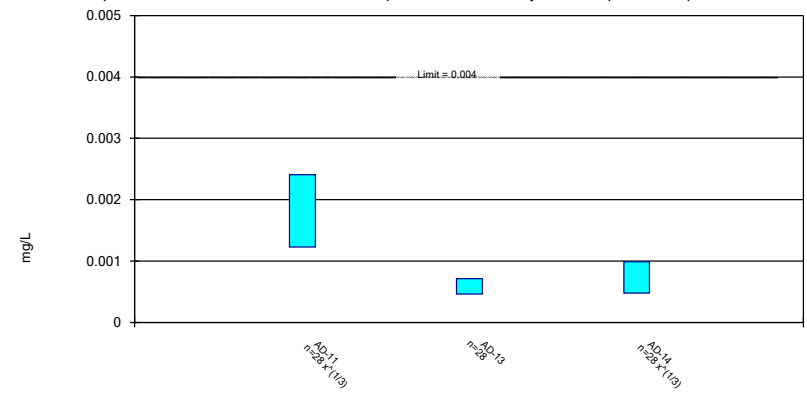
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

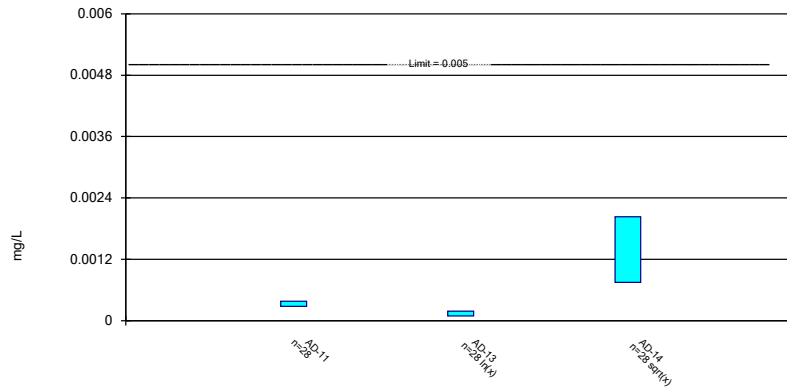
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Beryllium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
 Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

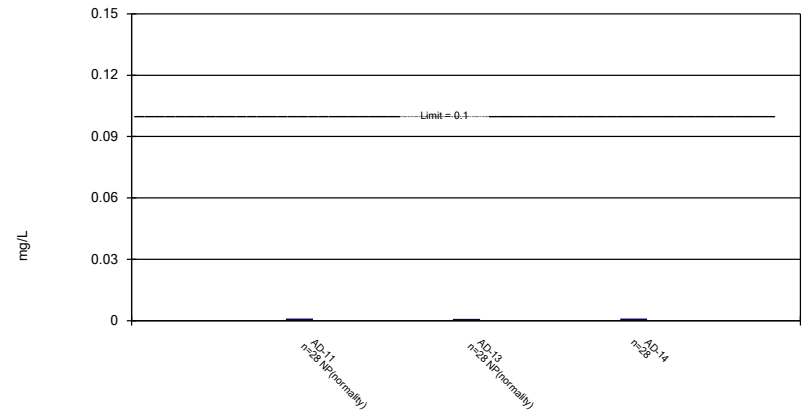
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

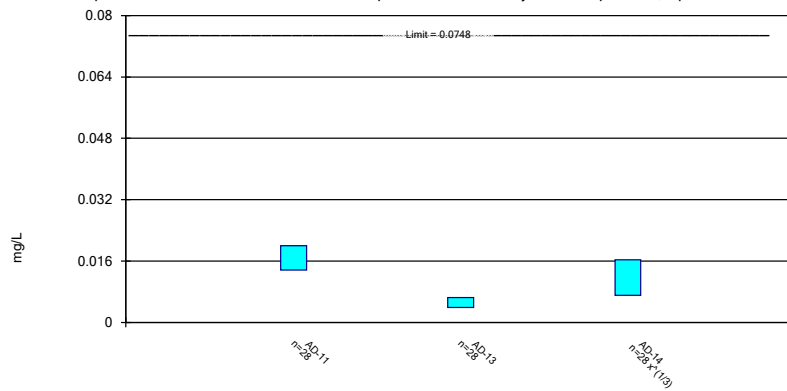
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

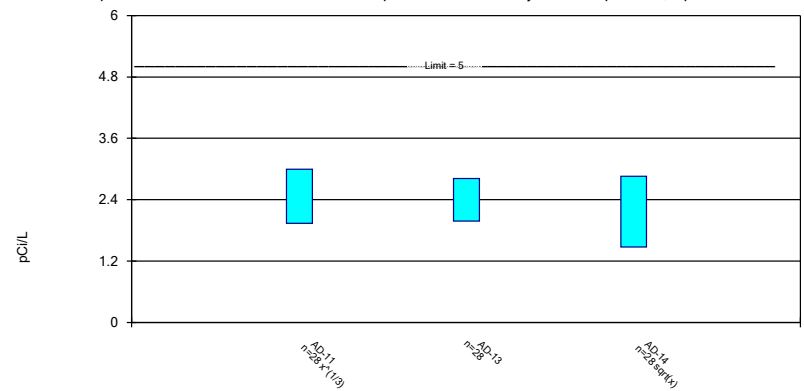
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

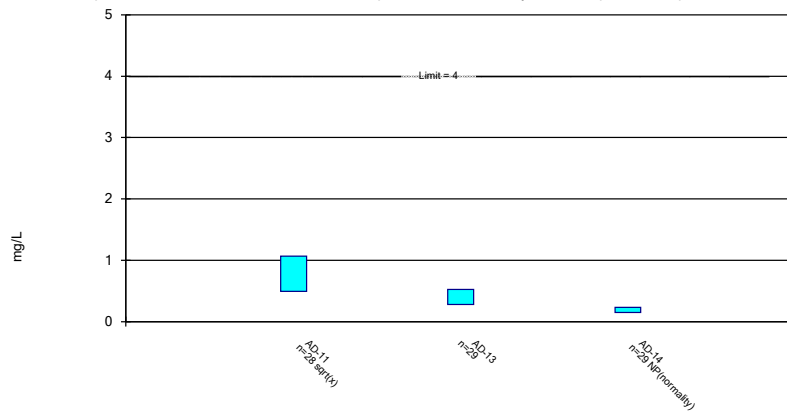
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric and Non-Parametric (NP) Confidence Interval

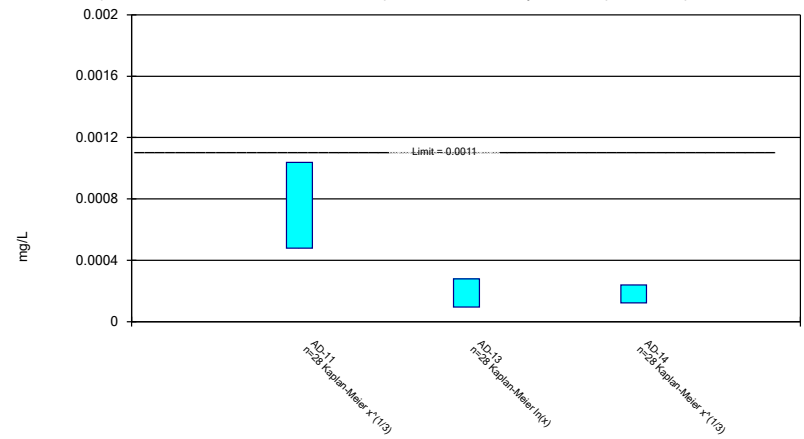
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

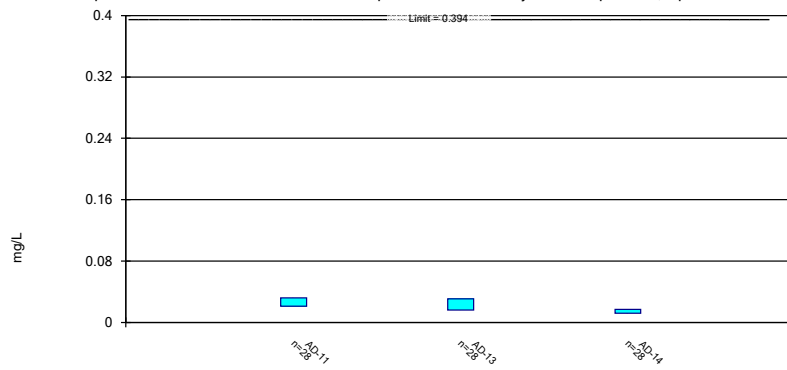
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

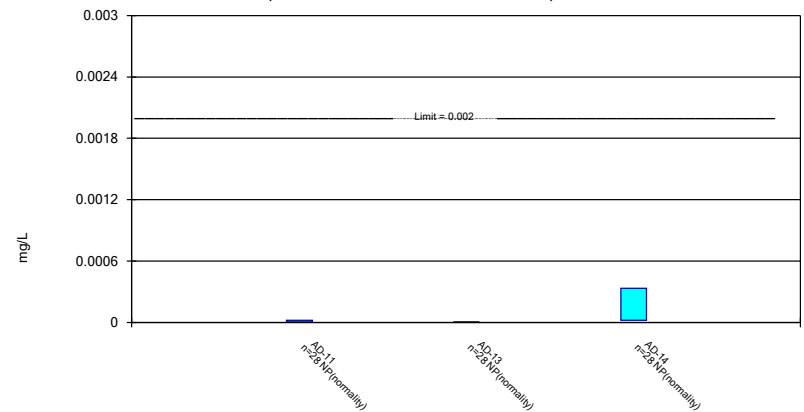
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

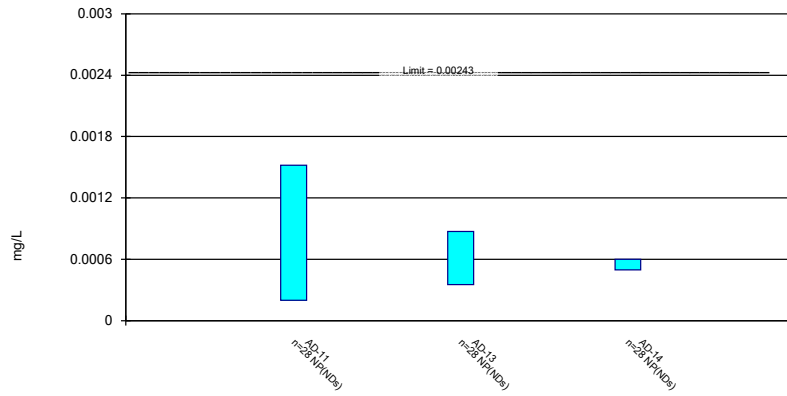
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

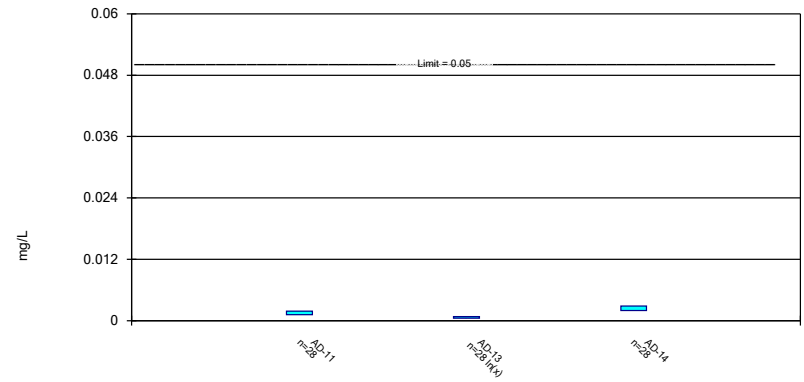
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Molybdenum, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Parametric Confidence Interval

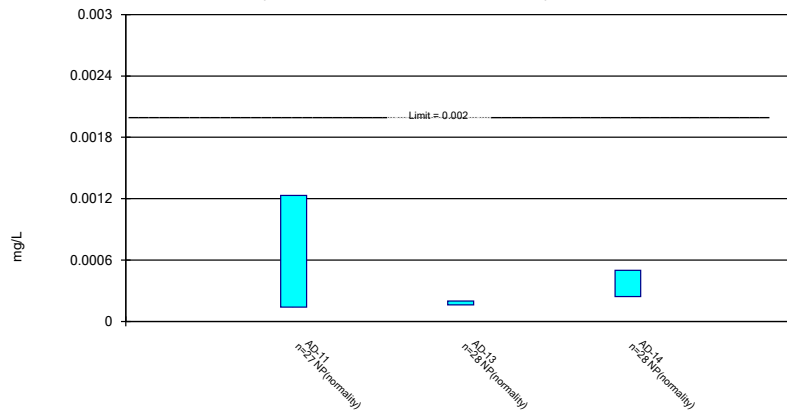
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Thallium, total Analysis Run 11/19/2024 4:33 PM View: Confidence Intervals
Welsh Landfill Client: Geosyntec Data: Welsh LF

APPENDIX 3 - NA

Alternate source demonstration(s) included in this appendix. Alternate sources are sources or reasons that explain that statistically significant increases over background or statistically significant levels above the groundwater protection standard are not attributable to the CCR unit.

APPENDIX 4 - NA

A summary of any transition between monitoring programs or an alternate monitoring frequency, for example the date and circumstances for transitioning from detection monitoring to assessment monitoring

APPENDIX 5- NA

Reports documenting monitoring well plugging and abandonment or well installation are included in the appendix. or other information required to be included in the annual report such as program related notification or assessment of corrective measures.

APPENDIX 6

Field reports and analytical reports.

CCR Groundwater Monitoring Well Inspection Form

Facility: AEP WASH PP Sampling Period: APRIL 2024
 Sampling Contractor: EA&EF Signature: [Signature]

Well No.	Well Locked	Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Housing, and Pad in Good Shape	Well Properly Labeled	Well cap present	Comments
AD-08	✓	✓	✓	✓	✓	✓	✓	
AD-07	✓	✓	✓	✓	✓	✓	✓	17.03
AD-04C	✓	✓	✓	✓	✓	✓	✓	
AD-04	✓	✓	✓	✓	✓	✓	✓	15.80
AD-04a	✓	✓	✓	✓	✓	✓	✓	15.84
AD-04b	✓	✓	✓	✓	✓	✓	✓	6.63
AD-01	✓	✓	✓	✓	✓	✓	✓	
AD-05	✓	✓	✓	✓	✓	✓	✓	
AD-13	✓	✓	✓	✓	✓	✓	✓	
AD-09	✓	✓	✓	✓	✓	✓	✓	
AD-06	✓	✓	✓	✓	✓	✓	✓	UVFB/2000N

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

CCR Groundwater Monitoring Well Inspection Form

Facility: Welsh Sampling Period: April 2024
 Sampling Contractor: Engle Signature: Pat Bowler

Well No.	Well Locked	Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Housing, and Pad in Good Shape	Well Properly Labeled	Well cap present	Comments
AD-15	✓	✓	✓	✓	✓	✓	✓	
AD-3	✓	✓	✓	✓	✓	✓	✓	
AD-2	✓	✓	✓	✓	✓	✓	✓	
AD-17	✓	✓	✓	✓	✓	✓	✓	
AD-18	✓	✓	✓	✓	✓	✓	✓	
AD-14	✓	✓	✓	✓	✓	✓	✓	
AD-16R	✓	✓	✓	✓	✓	✓	✓	
AD-11	✓	✓	✓	✓	✓	✓	✓	
AD-10	✓	✓	✓	✓	✓	✓	✓	
AD-12	✓	✓	✓	✓	✓	✓	✓	well pad overgrown
AD-22	✓	✓	✓	✓	✓	✓	✓	
AD-23	✓	✓	✓	✓	✓	✓	✓	

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

Facility Name: AP WASH PP
 Sample by: KIM M. DONNEL

Sample Location ID: AD-01

Depth to water, feet (TOC): 17.39
 Measured Total Depth, feet (TOC): 28.71

Depth to water date: 04/01/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
1022	17.43	210	5.57	415	3.2	1.89	266	21.14
1037	17.44	210	5.62	416	1.8	1.64	263	21.14
1042	17.44	210	5.70	424	1.7	1.60	260	21.11
1047	17.44	210	5.72	428	1.3	1.58	257	21.10

Total volume purged: 618m
 Sample appearance: 1049
 Sample time: 04/01/24
 Sample date

BACKGROUND DUPLICATE 1200

Facility Name	Welsh
Sample by	HTT Nimitz

Sample Location ID	AD-3
--------------------	------

Depth to water, feet (TOC)	1.75
Measured Total Depth, feet (TOC)	20.13

Depth to water date	4-1-24
---------------------	--------

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)
1005	8.88	300	4.02	88	22.3	10.83	376	21.18
1010	6.05	300	3.74	68	20.0	1.06	412	19.72
1015	4.16	300	3.74	65	5.9	0.87	415	19.65
1020	1.21	300	3.74	64	5.7	0.83	423	19.51

Total volume purged	
Sample appearance	Clear
Sample time	1022
Sample date	4-1-24

Dup - BASP
1313

Facility Name	ACF WEST PP
Sample by	Kenny McDaniel

Sample Location ID **AO-04c**

Depth to water, feet (TOC)	7.12
Measured Total Depth, feet (TOC)	18.82

Depth to water date **04/01/24**

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)
0928	7.28	220	4.51	349	0.0	3.13	302	22.47
0933	7.32	220	4.53	347	0.0	2.87	299	22.45
0938	7.34	220	4.53	343	0.0	2.84	284	22.27
0943	7.35	220	4.57	343	0.0	2.79	272	21.97

Total volume purged	
Sample appearance	Cl look
Sample time	0945
Sample date	04/01/24

Facility Name
 Sample by

AEO W-LSH PP
 K (copy m. Dentist)

Sample Location ID

AP-05

Depth to water, feet (TOC)
 Measured Total Depth, feet (TOC)

13.25
 32.88

Depth to water date

04/02/74

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
0826	14.17	98	5.77	293	80.9	1.87	340	23.18
0831	15.23	98	5.74	312	77.3	1.64	290	20.81
				WONT HOLD WATER				

Total volume purged
 Sample appearance
 Sample time
 Sample date

TURBID
 0845
 04/02/74

Facility Name AEP Wash PP
 Sample by Kenya M. Donald

Sample Location ID AQ-08

Depth to water, feet (TOC) 3.88
 Measured Total Depth, feet (TOC) 29.04

Depth to water date 04/01/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S}/\text{cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
0831	13.94	220	6.31	441	1.4	2.31	305	22.93
0836	13.93	220	6.52	436	1.7	2.20	297	22.95
0841	13.95	220	6.55	436	1.6	2.16	293	22.95
0846	13.95	220	6.57	436	1.8	2.13	289	22.98

Total volume purged CLEAN
 Sample appearance CLEAN
 Sample time 0846
 Sample date 04/01/24

Facility Name: ACP WASTE PP
 Sample by: KENNETH McDONALD

Sample Location ID: AR-09

Depth to water, feet (TOC): 13.16
 Measured Total Depth, feet (TOC): 36.45

Depth to water date: 04/02/24

Purge Stabilization Data									
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)	
1004	13.21	220	5.59	1880	1.8	2.42	293	21.87	
1009	13.22	220	5.59	1890	1.2	2.16	302	21.82	
1014	13.22	220	5.59	1930	1.0	2.13	298	21.79	
1019	13.22	220	5.60	1950	0.9	2.10	298	21.79	

Total volume purged: 666m
 Sample appearance: 1021
 Sample time: 04/02/24
 Sample date:

PBAP DUPLICATE 1200

Facility Name	Welsh
Sample by	M. H. Hoffman

Sample Location ID	AD-11
--------------------	-------

Depth to water, feet (TOC)	14.35
Measured Total Depth, feet (TOC)	22.10

Depth to water date	4-2-24
---------------------	--------

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
1029	14.54	200	3.71	566	15.2	9.69	465	21.21
1029	14.57	200	3.67	511	22.8	1.15	455	21.23
1034	14.58	200	3.66	575	7.8	0.65	450	21.36
1035	14.57	200	3.57	552	7.7	0.86	447	21.38

Total volume purged	
Sample appearance	clear
Sample time	1041
Sample date	4-2-24

Facility Name	ACP Westt PP
Sample by	Kenny McDonald

Sample Location ID	AD-13
--------------------	-------

Depth to water, feet (TOC)	13.70
Measured Total Depth, feet (TOC)	19.70

Depth to water date	04/02/24
---------------------	----------

Purge Stabilization Data								
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
0921	13.90	100	5.23	395	14.2	2.41	258	22.15
0926	13.93	100	5.26	389	11.1	2.37	255	23.09
0931	13.95	100	5.30	388	10.8	2.35	255	23.18
0936	13.96	100	5.31	387	10.7	2.32	253	23.21

Total volume purged	
Sample appearance	Clear
Sample time	0938
Sample date	04/02/24

Facility Name	Welsh
Sample by	Mont Hamlin
Depth to water, feet (TOC)	22-60
Measured Total Depth, feet (TOC)	41.47

Sample Location ID	AD-17
Depth to water date	4-1-24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
8:30	23.33	100	5.12	1610	102	10.35	204	21.43
8:35	24.02	100	5.44	1750	82.3	4.07	155	20.35

Will not hold water over.
Purged dry and sampled later in the day.

Total volume purged	
Sample appearance	clear
Sample time	1111
Sample date	4-1-24

CCR Groundwater Monitoring Well Inspection Form

Facility: Welsy
 Sampling Contractor: Eagk

Sampling Period: Sept. 2024
 Signature: [Signature]

Well No.	Well Locked	Fastener and Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Protective Cover, Barriers and Pad in Good Shape	Well Properly Labeled	Well Cap Present and Vented*	Comments
AD-15	✓	—	—	—	—	—	—	
AD-11	✓	—	—	—	—	—	—	
AD-14	—	—	✓	—	—	✓	✓	Pad is cracked
AD-2	✓	✓	—	—	—	—	—	overgrown
AD-3	✓	✓	—	—	—	—	—	
AD-16R	—	—	—	—	—	—	—	
AD-10	✓	—	—	—	—	—	—	
AD-7	✓	—	—	—	—	—	—	
AD-17	—	—	—	—	—	—	—	
AD-18	✓	—	—	—	—	—	—	
AD-22	—	—	—	—	—	—	—	
AD-23	—	—	—	—	—	—	—	

*Not all wells will be vented, especially flush mounted wells. If that is the case, please note "flush mount well" in the comments.

CCR Groundwater Monitoring Well Inspection Form

Facility: WELSH PP

Sampling Period: SEPTEMBER 2024

Sampling Contractor: EAGLE

Signature: [Handwritten Signature]

Well No.	Well Locked	Lock Functioning	Well Locked After Sampling	Access to Well Maintained	Well Casing, Housing, and Pad in Good Shape	Well Properly Labeled	Well cap present	Comments
AD-13	✓	✓	✓	✓	✓	✓	✓	
AD-09	✓	✓	✓	✓	✓	✓	✓	
AD-08	✓	✓	✓	✓	✓	✓	✓	
AD-05	✓	✓	✓	✓	✓	✓	✓	
AD-06	✓	✓	✓	✓	✓	✓	✓	13,17
AD-12	✓	✓	✓	✓	✓	✓	✓	20,70
AD-01	✓	✓	✓	✓	✓	✓	✓	
AD-04c	✓	✓	✓	✓	✓	✓	✓	
AD-04b	✓	✓	✓	✓	✓	✓	✓	9,45
AD-04	✓	✓	✓	✓	✓	✓	✓	18,21
AD-04a	✓	✓	✓	✓		✓	✓	18,28 WELL PAD CRACKED

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

Facility Name WELSHPP
 Sample by KENNY M. PERAUD

Sample Location ID AD-01

Depth to water, feet (TOC) 17.91
 Measured Total Depth, feet (TOC) 28.71

Depth to water date 09/10/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
0918	17.97	222	5.69	328	1.4	1.74	208	21.55
0923	17.97	222	5.66	331	1.0	1.63	213	21.49
0928	17.96	222	5.66	334	0.9	1.60	215	21.46
0933	17.97	222	5.66	335	0.7	1.59	219	21.44

Total volume purged
 Sample appearance
 Sample time
 Sample date

• C16AA
 0935
 09/10/24

BACKGROUND DUP 1100

Facility Name	Walter
Sample by	Matt Hamilton

Sample Location ID	AD-3
--------------------	------

Depth to water, feet (TOC)	9.64
Measured Total Depth, feet (TOC)	20.13

Depth to water date	9-10-24
---------------------	---------

Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
855	0.55	300	3.20	77	11.8	1.95	489	21.60		
900	10.65	200	3.15	71	11.2	0.60	511	21.87		
905		300	3.18	70	11.2	0.58	515	21.81		

Total volume purged	
Sample appearance	Clear
Sample time	907
Sample date	9-10-24

Dup - BASD
1159

Facility Name	WMSH PP
Sample by	R. W. M. P. M. (D. J. M. A. U)

Sample Location ID	AD-09c
--------------------	--------

Depth to water, feet (TOC)	9.60
Measured Total Depth, feet (TOC)	18.82

Depth to water date	09/10/24
---------------------	----------

Purge Stabilization Data								
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ($\mu\text{S}/\text{cm}$)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}\text{C}$)
1024	9.74	218	5.02	365	2.4	2.87	292	21.06
1029	9.76	218	4.91	358	1.3	2.13	297	20.97
1034	9.80	218	4.90	354	1.1	2.09	301	20.92
1039	9.81	218	4.88	352	0.8	2.07	304	20.91

Total volume purged	
Sample appearance	Clear
Sample time	1041
Sample date	09/10/24

(Handwritten signature)

Facility Name	W FCSH PP
Sample by	Kerry M. Donald

Sample Location ID: AD-08

Depth to water, feet (TOC)	15.13
Measured Total Depth, feet (TOC)	29.04

Depth to water date: 09/09/24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
1019	15.30	224	6.71	422	2.0	1.58	283	22.06
1029	15.31	224	6.67	422	1.7	1.57	277	22.09
1029	15.31	224	6.66	422	1.9	1.56	274	22.11

Total volume purged	
Sample appearance	CLARA
Sample time	1031
Sample date	09/09/24

Facility Name	WELSH PP
Sample by	Kenny M. Denard

Sample Location ID	AD-13
--------------------	-------

Depth to water, feet (TOC)	16.08
Measured Total Depth, feet (TOC)	19.40

Depth to water date	09/08/24
---------------------	----------

Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)		
0832	17.11	100	9.17	383	17.4	3.02	291	20.88		
0837	18.03	100	5.28	402	22.8	2.57	281	20.85		

Total volume purged	
Sample appearance	SLIGHTLY TURBID
Sample time	1106
Sample date	09/09/24

Facility Name	Wells
Sample by	JKH Jernigan

Depth to water, feet (TOC)	15.72
Measured Total Depth, feet (TOC)	21.27

Sample Location ID	AD-14
--------------------	-------

Depth to water date	9-9-24
---------------------	--------

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (µS/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature (°C)
1:46	16.00 16.00	220	4.30	907	4.0	0.86	451	25.97
1:51	16.08	220	4.24 4.24	822	0	0.59	452	24.95
1:56	16.11	220	4.11 4.11	807	0	0.67	457	25.28

Total volume purged	
Sample appearance	clear
Sample time	1:58
Sample date	9-9-24

AD-2-15.09 AD-7-17.00 AD-22-3.86
 AD-10-19.36 AD-18-7.64 AD-23-4.49

Facility Name: Walsh
 Sample by: Matt Hamilton

Sample Location ID: AD-15

Depth to water, feet (TOC): 22.42
 Measured Total Depth, feet (TOC): 44.15

Depth to water date: 9-9-24

Purge Stabilization Data

Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond (μ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ($^{\circ}$ C)
9:04	22.91	3cc	4.67	232	146	1.55	407	22.32
9:09	23.13	3cc	3.91	275	45.8	1.42	386	22.65
9:14	23.15	3cc	3.70	244	35.3	1.34	378	22.88
9:19	23.16	3cc	3.70	302	37.1	1.36	372	23.04
9:24	23.18	3cc	3.78	260 267	35.2	1.33 1.33	364	24.32

Total volume purged:
 Sample appearance: Cloud
 Sample time: 9:26
 Sample date: 9-9-24



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-1

Customer Description:

Lab Number: 241174-001

Preparation:

Date Collected: 04/01/2024 11:49 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.073	µg/L	1	0.100	0.008	J1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Arsenic	0.26	µg/L	1	0.10	0.03		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Barium	190	µg/L	1	0.20	0.05	M1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Beryllium	0.524	µg/L	1	0.050	0.007		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Boron	0.781	mg/L	1	0.050	0.007		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Cadmium	0.032	µg/L	1	0.020	0.004		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Calcium	44.9	mg/L	1	0.05	0.02	M1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Chromium	0.28	µg/L	1	0.30	0.07	J1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Cobalt	1.53	µg/L	1	0.020	0.005		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Lead	0.14	µg/L	1	0.20	0.05	J1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Lithium	0.00378	mg/L	1	0.00030	0.00006		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.3	µg/L	1	0.5	0.1	J1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Selenium	7.67	µg/L	1	0.50	0.04		GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	GES	04/11/2024 17:26	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.99	pCi/L	0.21	0.25		ST	04/26/2024 09:55	SW-846 9315-1986, Rev. 0
Carrier Recovery	87.2	%						
Radium-228	1.40	pCi/L	0.17	0.51	L1	TTP	05/06/2024 16:08	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	87.5	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
 4001 Bixby Road
 Groveport, OH 43125
 Phone: 614-836-4221
 Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-5

Customer Description:

Lab Number: 241174-002

Preparation:

Date Collected: 04/02/2024 09:45 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.015	µg/L	1	0.100	0.008	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Arsenic	2.94	µg/L	1	0.10	0.03		GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Barium	78.4	µg/L	1	0.20	0.05		GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Beryllium	0.063	µg/L	1	0.050	0.007		GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Boron	0.039	mg/L	1	0.050	0.007	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Cadmium	0.007	µg/L	1	0.020	0.004	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Calcium	26.0	mg/L	1	0.05	0.02		GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Chromium	0.26	µg/L	1	0.30	0.07	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Cobalt	11.5	µg/L	1	0.020	0.005		GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Lead	0.06	µg/L	1	0.20	0.05	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Lithium	0.0753	mg/L	1	0.00030	0.00006		GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.1	µg/L	1	0.5	0.1	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Selenium	0.08	µg/L	1	0.50	0.04	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	GES	04/11/2024 17:41	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.99	pCi/L	0.22	0.34		ST	04/26/2024 09:55	SW-846 9315-1986, Rev. 0
Carrier Recovery	85.8	%						
Radium-228	1.35	pCi/L	0.17	0.52	L1	TTP	05/06/2024 16:08	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	79.3	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-17

Customer Description:

Lab Number: 241174-003

Preparation:

Date Collected: 04/01/2024 12:11 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.012	µg/L	1	0.100	0.008	J1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Arsenic	0.34	µg/L	1	0.10	0.03		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Barium	12.7	µg/L	1	0.20	0.05		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Beryllium	0.023	µg/L	1	0.050	0.007	J1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Boron	0.096	mg/L	1	0.050	0.007		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Cadmium	0.010	µg/L	1	0.020	0.004	J1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Calcium	131	mg/L	1	0.05	0.02		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.30	0.07		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Cobalt	30.3	µg/L	1	0.020	0.005		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Lead	0.07	µg/L	1	0.20	0.05	J1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Lithium	0.197	mg/L	1	0.00030	0.00006		GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Selenium	0.32	µg/L	1	0.50	0.04	J1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 17:46	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.77	pCi/L	0.13	0.12		ST	05/10/2024 11:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	95.9	%						
Radium-228	0.88	pCi/L	0.15	0.46	L1	TTP	05/06/2024 16:08	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	83.9	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: Duplicate-Background

Customer Description:

Lab Number: 241174-004

Preparation:

Date Collected: 04/01/2024 01:00 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.077	µg/L	1	0.100	0.008	J1	GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Arsenic	0.27	µg/L	1	0.10	0.03		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Barium	185	µg/L	1	0.20	0.05		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Beryllium	0.520	µg/L	1	0.050	0.007		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Boron	0.752	mg/L	1	0.050	0.007		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Cadmium	0.029	µg/L	1	0.020	0.004		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Calcium	43.5	mg/L	1	0.05	0.02		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.30	0.07		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Cobalt	1.49	µg/L	1	0.020	0.005		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Lead	0.16	µg/L	1	0.20	0.05	J1	GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Lithium	0.00379	mg/L	1	0.00030	0.00006		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.3	µg/L	1	0.5	0.1	J1	GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Selenium	7.62	µg/L	1	0.50	0.04		GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	GES	04/11/2024 17:52	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: Equipment Blank-Background

Customer Description:

Lab Number: 241174-005

Preparation:

Date Collected: 04/01/2024 11:26 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Boron	0.014	mg/L	1	0.050	0.007	J1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Chromium	0.35	µg/L	1	0.30	0.07		GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Cobalt	0.009	µg/L	1	0.020	0.005	J1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 17:57	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: Field Blank-Background

Customer Description:

Lab Number: 241174-006

Preparation:

Date Collected: 04/01/2024 11:28 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Chromium	0.24	µg/L	1	0.30	0.07	J1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Cobalt	0.006	µg/L	1	0.020	0.005	J1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 18:02	EPA 200.8-1994, Rev. 5.4

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241174

Customer: Welsh Power Station

Date Reported: 05/24/2024

Data Qualifier Legend

- J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
- M1 - The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.
- U1 - Not detected at or below method detection limit (MDL).
- L1 - The associated laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) recovery was outside acceptance limits.

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Bixby Road
 Groveport, Ohio 43125

Contacts: Michael Ohlinger (614-836-4184)

Project Name: Welsh Background
 Contact Name: Rebecca Jones
 Contact Phone: (737) 330-3725

Sampler(s): Matt Hamilton Kenny McDonald

Sample Identification		Analysis Turnaround Time (in Calendar Days)				Field-filter 500 mL bottle, then pH<2, HNO ₃	1 L bottle, Cool, 0-6°C	Three (six every 10th*) 1 L bottles, pH<2, HNO ₃	250 mL Glass Bottle, HCL ₂ pH<2	COC/Order #:
		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix					
AD-1		4/1/2024	1049	G	GW	8				241174
AD-5		4/2/2024	845	G	GW	5				
AD-17		4/1/2024	1111	G	GW	5				
DUPLICATE - BACKGROUND		4/1/2024	1200	G	GW	2				
EQUIPMENT BLANK - BACKGROUND		4/1/2024	1026	G	GW	2				
FIELD BLANK - BACKGROUND		4/1/2024	1028	G	GW	1				

Site Contact: _____ **Date:** _____

Site Contact: _____

Sample Specific Notes: _____

Routine (28 days)

TG-32 needed

Preservation Used: 1= Ice, 2= HCl; 3= H₂SO₄; 4=HNO₃; 5=NaOH; 6= Other ; F= filter in field

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>Robert Egan</i>	Date/Time: 4-3-24 1300	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received in Laboratory by: <i>Michael Ohlinger</i>	Date/Time: 4/5/24 1110

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17

AEP WATER & WASTE SAMPLE RECEIPT FORM

<u>Package Type</u>		<u>Delivery Type</u>	
<input checked="" type="radio"/> Cooler	Box Bag Envelope	PONY <input checked="" type="radio"/> UPS	FedEX USPS
		Other _____	
Plant/Customer <u>Welsh Power Station</u>		Number of Plastic Containers: <u>18</u>	
Opened By <u>Misgna/Breo/Sackab</u>		Number of Glass Containers: <u>5</u>	
Date/Time <u>04/05/24 11:10</u>		Number of Mercury Containers: _____	
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / <input type="radio"/> N or <input checked="" type="radio"/> N/A Initial: <u>mbc</u> on ice / <input checked="" type="radio"/> no ice			
(IR Gun Ser# <u>240009843</u> , Expir. <u>01/03/2026</u>) - If No, specify each deviation: _____			
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____			
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> 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: mbc / 5/11/24

pH paper (circle one): MQuant,PN1.09535.0001,LOT# _____ [OR] Lab Rat,PN4801,LOT# X000RWDG21 Exp. 11/15/2024

- 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# 241174 Initial & Date & Time : _____

Logged by WCG Comments: _____

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.

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Jonathan Barnhill		Lab Supervisor	4/22/2024
Name (printed)	Signature	Official Title	Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: 241174
Reviewer Name: Jonathan Barnhill
LRC Date: 4/22/2024
Laboratory Job Number: 241174
Prep Batch Number(s): PB24041002 QC2404114

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	No	ER3
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: 241174
Reviewer Name: Jonathan Barnhill
LRC Date: 4/22/2024
Laboratory Job Number: 241174
Prep Batch Number(s): PB24041002 QC2404114

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: 241174
Reviewer Name: Jonathan Barnhill
LRC Date: 4/22/2024
Laboratory Job Number: 241174
Prep Batch Number(s): PB24041002 QC2404114

Exception Report No.	Description
ER1	Linear Dynamic Range (LDR) study used to determine upper limit of analyte calibration.
ER2	CCB acceptance criteria is $CCB < 2.2 * MDL$.
ER3	Matrix Spike Failed for Calcium & Barium on Sample 241174-001.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
³ NA - Not applicable; NR - Not reviewed.
⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Susann Sulamann

Name (printed)

S. Sulamann Senior Chemist

Signature

Official Title

4-15-24

Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Plant
Reviewer Name: Susann Sulzmann
LRC Date: 04-15-2024
Laboratory Job Number: 2401174
Prep Batch Number(s): PB24040905

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Mercury Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Plant
Reviewer Name: Susann Sulzmann
LRC Date: 04-15-2024
Laboratory Job Number: 2401174
Prep Batch Number(s): PB24040905

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

Mercury Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Plant

Reviewer Name: Susann Sulzmann

LRC Date: 04-15-2024

Laboratory Job Number: 2401174

Prep Batch Number(s): PB24040905

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB<MQL.

- ¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
- ² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
- ³ NA - Not applicable; NR - Not reviewed.
- ⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241145

Customer: Welsh Power Station

Date Reported: 05/06/2024

Customer Sample ID: AD-1

Customer Description:

Lab Number: 241145-001

Preparation:

Date Collected: 04/01/2024 11:49 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	3.33	mg/L	2	0.04	0.01		CRJ	04/09/2024 14:07	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.23	mg/L	2	0.06	0.02		CRJ	04/09/2024 14:07	EPA 300.1 -1997, Rev. 1.0
Sulfate	104	mg/L	10	3.0	0.6		CRJ	04/10/2024 14:16	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	310	mg/L	1	50	20		ELT	04/05/2024 08:17	SM 2540C-2015

Customer Sample ID: AD-5

Customer Description:

Lab Number: 241145-002

Preparation:

Date Collected: 04/02/2024 09:45 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	32.9	mg/L	2	0.04	0.01		CRJ	04/09/2024 16:52	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.18	mg/L	2	0.06	0.02		CRJ	04/09/2024 16:52	EPA 300.1 -1997, Rev. 1.0
Sulfate	41.4	mg/L	2	0.6	0.1		CRJ	04/09/2024 16:52	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	210	mg/L	1	50	20		ELT	04/05/2024 08:17	SM 2540C-2015

Customer Sample ID: AD-17

Customer Description:

Lab Number: 241145-003

Preparation:

Date Collected: 04/01/2024 12:11 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	31.8	mg/L	5	0.10	0.03		CRJ	04/09/2024 17:25	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.13	mg/L	5	0.15	0.05	J1	CRJ	04/09/2024 17:25	EPA 300.1 -1997, Rev. 1.0
Sulfate	950	mg/L	50	15	3		CRJ	04/09/2024 15:14	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1280	mg/L	2	100	40		ELT	04/05/2024 08:23	SM 2540C-2015



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241145

Customer: Welsh Power Station

Date Reported: 05/06/2024

Customer Sample ID: DUPLICATE - BACKGROUND

Customer Description:

Lab Number: 241145-004

Preparation:

Date Collected: 04/01/2024 13:00 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	3.35	mg/L	2	0.04	0.01		CRJ	04/09/2024 15:46	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.23	mg/L	2	0.06	0.02		CRJ	04/09/2024 15:46	EPA 300.1 -1997, Rev. 1.0
Sulfate	103	mg/L	10	3.0	0.6		CRJ	04/10/2024 14:49	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	650	mg/L	2	100	40		ELT	04/05/2024 08:23	SM 2540C-2015

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

Data Qualifer Legend

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Dolan Chemical Laboratory (DCL)
 4001 Blxby Road
 Groveport, Ohio 43125

Contacts: Michael Ohlinger (614-836-4184)

Project Name: Welsh Background
 Contact Name: Rebecca Jones
 Contact Phone: (737) 330-3725

Sample(s): Matt Hamilton Kenny McDonald

Analysis Turnaround Time (in Calendar Days)
 Routine (28 days)

Site Contact: _____ Date: _____

COC/Order #: 241145

For Lab Use Only:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials					Hg	Sample Specific Notes:
						Mo, Se, TL	Ba, Cd, Cr, Co, Pb, HNO ₃	Field-filter 500 mL bottle, then pH<2, HNO ₃	1 L bottle, Cool, 0-6°C	Three (six every 10th) 1 L bottles, pH<2, HNO ₃		
AD-1	4/1/2024	1049	G	GW	1					X		TG-32 needed
AD-5	4/2/2024	845	G	GW	1					X		
AD-17	4/1/2024	1111	G	GW	1					X		
DUPLICATE - BACKGROUND	4/1/2024	1200	G	GW	1					X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other : F= filter in field

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>Bob Tomlin</i>	Company: <i>E-gt</i>	Date/Time: 4-3-24 1300	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>Michael Ohly</i>	Date/Time: 4/4/24 1000

AEP WATER & WASTE SAMPLE RECEIPT FORM

<p><u>Package Type</u></p> <p><input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope</p>	<p><u>Delivery Type</u></p> <p>PONY <input checked="" type="radio"/> UPS FedEX USPS</p> <p>Other _____</p>			
Plant/Customer <u>Wels h</u>	Number of Plastic Containers: <u>4</u>			
Opened By <u>WCG / MGH</u>	Number of Glass Containers: <u>-</u>			
Date/Time <u>4/4/24 1000</u>	Number of Mercury Containers: <u>-</u>			
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / <input type="radio"/> N or N/A Initial: <u>MGH/WCG</u> <input checked="" type="radio"/> on ice / no ice (IR Gun Ser# 240009843, Expir. 01/03/2026) - If No, specify each deviation: _____				
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____				
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____				
Requested turnaround: <u>Routine</u> 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: WCG / MGH 4/4/24

pH paper (circle one): MQuant,PN1.09535 0001,LOT# _____ [OR] Lab Rat,PN4801,LOT# X000RWDG21 Exp 11/15/2024

- 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# 241145 Initial & Date & Time : _____

Logged by MSS Comments: _____

Reviewed by [Signature]
4/4/24

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.

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Tim Arnold		Principle Chemist	04/12/24
Name (printed)	Signature	Official Title	Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Background
Reviewer Name: Tim Arnold
LRC Date: 4/12/24
Laboratory Job Number: 241145
Prep Batch Number(s): QC2404085

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Background
Reviewer Name: Tim Arnold
LRC Date: 4/12/24
Laboratory Job Number: 241145
Prep Batch Number(s): QC2404085

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

Ion Chromatography Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Background
Reviewer Name: Tim Arnold
LRC Date: 4/12/24
Laboratory Job Number: 241145
Prep Batch Number(s): QC2404085

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB<MQL.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Michael Ohlinger *Michael Ohlinger* Chemist 5/6/2024
Name (printed) Signature Official Title Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404077

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

TDS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Michael Ohlinger

LRC Date: 05/06/2024

Laboratory Job Number: 241145

Prep Batch Number(s): QC2404077

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

TDS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Background
Reviewer Name: Michael Ohlinger
LRC Date: 05/06/2024
Laboratory Job Number: 241145
Prep Batch Number(s): QC2404077

Exception Report No.	Description

¹ Items identified by the letter “R” must be available as a hard copy or as a .pdf file. Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period.
² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
³ NA - Not applicable; NR - Not reviewed.
⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is “No” or “NR.”



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-11

Customer Description:

Lab Number: 241177-001

Preparation:

Date Collected: 04/02/2024 11:41 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.021	µg/L	1	0.100	0.008	J1	GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Arsenic	0.74	µg/L	1	0.10	0.03		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Barium	16.9	µg/L	1	0.20	0.05		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Beryllium	1.33	µg/L	1	0.050	0.007		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Boron	1.07	mg/L	1	0.050	0.007		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Cadmium	0.363	µg/L	1	0.020	0.004		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Calcium	11.6	mg/L	1	0.05	0.02		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Chromium	0.58	µg/L	1	0.30	0.07		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Cobalt	17.0	µg/L	1	0.020	0.005		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Lead	1.02	µg/L	1	0.20	0.05		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Lithium	0.0196	mg/L	1	0.00030	0.00006		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Mercury	8	ng/L	1	5	2		RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Selenium	2.22	µg/L	1	0.50	0.04		GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4
Thallium	0.16	µg/L	1	0.20	0.02	J1	GES	04/11/2024 18:07	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.84	pCi/L	0.14	0.12		ST	05/10/2024 11:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	95.0	%						
Radium-228	1.02	pCi/L	0.14	0.45	L1, P2	TTP	04/30/2024 15:46	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.3	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-13

Customer Description:

Lab Number: 241177-002

Preparation:

Date Collected: 04/02/2024 10:38 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.028	µg/L	1	0.100	0.008	J1	GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Arsenic	0.42	µg/L	1	0.10	0.03		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Barium	62.2	µg/L	1	0.20	0.05		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Beryllium	0.503	µg/L	1	0.050	0.007		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Boron	1.23	mg/L	1	0.050	0.007		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Cadmium	0.086	µg/L	1	0.020	0.004		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Calcium	11.0	mg/L	1	0.05	0.02		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Chromium	0.33	µg/L	1	0.30	0.07		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Cobalt	3.26	µg/L	1	0.020	0.005		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Lead	0.13	µg/L	1	0.20	0.05	J1	GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Lithium	0.00972	mg/L	1	0.00030	0.00006		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Mercury	5	ng/L	1	5	2		RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.1	µg/L	1	0.5	0.1	J1	GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Selenium	0.53	µg/L	1	0.50	0.04		GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	µg/L	1	0.20	0.02	J1	GES	04/11/2024 18:12	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.63	pCi/L	0.12	0.15		ST	05/10/2024 11:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	97.3	%						
Radium-228	1.10	pCi/L	0.15	0.47	L1, P2	TTP	04/30/2024 15:46	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	88.5	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-14

Customer Description:

Lab Number: 241177-003

Preparation:

Date Collected: 04/02/2024 10:10 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.023	µg/L	1	0.100	0.008	J1	GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Arsenic	0.22	µg/L	1	0.10	0.03		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Barium	33.1	µg/L	1	0.20	0.05		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Beryllium	0.531	µg/L	1	0.050	0.007		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Boron	0.923	mg/L	1	0.050	0.007		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Cadmium	0.423	µg/L	1	0.020	0.004		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Calcium	2.91	mg/L	1	0.05	0.02		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Chromium	0.41	µg/L	1	0.30	0.07		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Cobalt	5.25	µg/L	1	0.020	0.005		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Lead	0.21	µg/L	1	0.20	0.05		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Lithium	0.00849	mg/L	1	0.00030	0.00006		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Mercury	<8	ng/L	4	20	8	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Selenium	3.23	µg/L	1	0.50	0.04		GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	GES	04/11/2024 18:17	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.53	pCi/L	0.11	0.13		ST	05/10/2024 11:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	92.8	%						
Radium-228	-0.18	pCi/L	0.10	0.37	L1, P2	TTP	04/30/2024 15:46	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	87.4	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: DUPLICATE-LANDFILL

Customer Description:

Lab Number: 241177-004

Preparation:

Date Collected: 04/02/2024 13:30 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.022	µg/L	1	0.100	0.008	J1	GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Arsenic	0.23	µg/L	1	0.10	0.03		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Barium	33.8	µg/L	1	0.20	0.05		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Beryllium	0.512	µg/L	1	0.050	0.007		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Boron	0.935	mg/L	1	0.050	0.007		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Cadmium	0.427	µg/L	1	0.020	0.004		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Calcium	2.99	mg/L	1	0.05	0.02		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Chromium	0.37	µg/L	1	0.30	0.07		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Cobalt	5.35	µg/L	1	0.020	0.005		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Lead	0.22	µg/L	1	0.20	0.05		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Lithium	0.00825	mg/L	1	0.00030	0.00006		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Mercury	3	ng/L	1	5	2	J1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Selenium	3.32	µg/L	1	0.50	0.04		GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4
Thallium	0.03	µg/L	1	0.20	0.02	J1	GES	04/11/2024 18:22	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: EQUIPMENT BLANK-LANDFILL

Customer Description:

Lab Number: 241177-005

Preparation:

Date Collected: 04/02/2024 09:52 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Chromium	0.21	µg/L	1	0.30	0.07	J1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Cobalt	0.024	µg/L	1	0.020	0.005		GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	04/10/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 21:58	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: FIELD BLANK-LANDFILL

Customer Description:

Lab Number: 241177-006

Preparation:

Date Collected: 04/02/2024 09:53 EDT

Date Received: 04/05/2024 11:10 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Chromium	0.28	µg/L	1	0.30	0.07	J1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Cobalt	0.024	µg/L	1	0.020	0.005		GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 22:03	EPA 200.8-1994, Rev. 5.4

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241177

Customer: Welsh Power Station

Date Reported: 05/24/2024

Data Qualifier Legend

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

U1 - Not detected at or below method detection limit (MDL).

L1 - The associated laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) recovery was outside acceptance limits.

P2 - The precision on the laboratory control sample duplicate (LCSD) was above acceptance limits.

AEP WATER & WASTE SAMPLE RECEIPT FORM

<p><u>Package Type</u></p> <p><input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope</p>	<p><u>Delivery Type</u></p> <p><input type="radio"/> PONY <input checked="" type="radio"/> UPS <input type="radio"/> FedEx <input type="radio"/> USPS</p> <p>Other _____</p>			
Plant/Customer <u>Welsh power station</u>	Number of Plastic Containers: <u>18</u>			
Opened By <u>Misgma</u>	Number of Glass Containers: <u>5</u>			
Date/Time <u>04/05/24 11:00 Am</u>	Number of Mercury Containers: _____			
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A Initial: <u>mbcc</u> on ice / <input checked="" type="radio"/> no ice				
(IR Gun Ser# <u>240009843</u> , Expir. <u>01/03/2026</u>) - If No, specify each deviation: _____				
Was container in good condition? Y / N Comments _____				
Was Chain of Custody received? Y / N Comments _____				
Requested turnaround: <u>28 days</u> 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: MBH / IDH / BLH

pH paper (circle one): MQuant,PN1.09535.0001,LOT# _____ [OR] Lab Rat,PN4801,LOT# X000RWDG21 Exp 11/18/2024

- 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# 241177 Initial & Date & Time : _____

Logged by WCG Comments: _____

Reviewed by MSB _____

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.

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Suzann Sulzmann S. Sulzmann Senior Chemist 4-15-24
Name (printed) Signature Official Title Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Plant
Reviewer Name: Susann Sulzmann
LRC Date: 04-15-2024
Laboratory Job Number: 2401177
Prep Batch Number(s): PB24040905

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Mercury Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Plant
Reviewer Name: Susann Sulzmann
LRC Date: 04-15-2024
Laboratory Job Number: 2401177
Prep Batch Number(s): PB24040905

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Jonathan Barnhill

Name (printed)

Signature

Lab Supervisor

Official Title

4/22/2024

Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 4/22/2024
Laboratory Job Number: 241177
Prep Batch Number(s): PB24041002 PB24041003 QC2404114

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 4/22/2024
Laboratory Job Number: 241177
Prep Batch Number(s): PB24041002 PB24041003 QC2404114

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

ICP-MS Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 4/22/2024
Laboratory Job Number: 241177
Prep Batch Number(s): PB24041002 PB24041003 QC2404114

Exception Report No.	Description
ER1	Linear Dynamic Range (LDR) study used to determine upper limit of analyte calibration.
ER2	CCB acceptance criteria is $CCB < 2.2 * MDL$.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
³ NA - Not applicable; NR - Not reviewed.
⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241148

Customer: Welsh Power Station

Date Reported: 05/06/2024

Customer Sample ID: AD-11

Customer Description:

Lab Number: 241148-001

Preparation:

Date Collected: 04/02/2024 11:41 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	9.75	mg/L	2	0.04	0.01		CRJ	04/10/2024 15:22	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.66	mg/L	2	0.06	0.02		CRJ	04/10/2024 15:22	EPA 300.1 -1997, Rev. 1.0
Sulfate	437	mg/L	25	8	2		CRJ	04/10/2024 06:35	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	670	mg/L	1	50	20		ELT	04/05/2024 08:59	SM 2540C-2015

Customer Sample ID: AD-13

Customer Description:

Lab Number: 241148-002

Preparation:

Date Collected: 04/02/2024 10:38 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	4.40	mg/L	2	0.04	0.01		CRJ	04/10/2024 10:59	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.74	mg/L	2	0.06	0.02		CRJ	04/10/2024 10:59	EPA 300.1 -1997, Rev. 1.0
Sulfate	151	mg/L	10	3.0	0.6		CRJ	04/10/2024 09:53	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	270	mg/L	1	50	20		ELT	04/05/2024 09:22	SM 2540C-2015

Customer Sample ID: AD-14

Customer Description:

Lab Number: 241148-003

Preparation:

Date Collected: 04/02/2024 10:10 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	2.01	mg/L	2	0.04	0.01		CRJ	04/10/2024 13:11	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.14	mg/L	2	0.06	0.02		CRJ	04/10/2024 13:11	EPA 300.1 -1997, Rev. 1.0
Sulfate	92.7	mg/L	2	0.6	0.1		CRJ	04/10/2024 13:11	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	200	mg/L	1	50	20		ELT	04/05/2024 09:28	SM 2540C-2015



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 241148

Customer: Welsh Power Station

Date Reported: 05/06/2024

Customer Sample ID: DUPLICATE - LANDFILL

Customer Description:

Lab Number: 241148-004

Preparation:

Date Collected: 04/02/2024 13:30 EDT

Date Received: 04/04/2024 10:00 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	2.01	mg/L	2	0.04	0.01		CRJ	04/10/2024 12:38	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.14	mg/L	2	0.06	0.02		CRJ	04/10/2024 12:38	EPA 300.1 -1997, Rev. 1.0
Sulfate	92.4	mg/L	2	0.6	0.1		CRJ	04/10/2024 12:38	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	200	mg/L	1	50	20		ELT	04/05/2024 09:28	SM 2540C-2015

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



WATER & WASTE SAMPLE RECEIPT FORM

Package Type				Delivery Type			
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	<input type="radio"/> PONY	<input type="radio"/> UPS	<input checked="" type="radio"/> FedEX	<input type="radio"/> USPS
Other _____				Other _____			

Plant/Customer Welsh Number of Plastic Containers: 4

Opened By MGK/WCG/MSO Number of Glass Containers: -

Date/Time 4/4/24 1000 Number of Mercury Containers: -

Were all temperatures within 0-6°C? Y / N or N/A Initial: WCG/MSO on ice / no ice
(IR Gun Ser# 240009843, Expir. 01/03/2026) - If No, specify each deviation: _____

Was container in good condition? Y / N Comments _____

Was Chain of Custody received? Y / N Comments _____

Requested turnaround: Routine 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: MGK/WCG

pH paper (circle one): MQuant,PN1.09535.0001,LOT# _____ (OR) Lab Rat,PN4801,LOT# X000RWDG21 Exp 11/15/2024

- 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# 241148 Initial & Date & Time : _____

Comments: _____

Logged by MSO _____

Reviewed by [Signature]
4/4/24

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.

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Tim Arnold _____ Principle Chemist 4/12/24
Name (printed) Signature Official Title Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Tim Arnold

LRC Date: 4/12/24

Laboratory Job Number: 241148

Prep Batch Number(s): QC2404085

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Landfill
Reviewer Name: Tim Arnold
LRC Date: 4/12/24
Laboratory Job Number: 241148
Prep Batch Number(s): QC2404085

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSS?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

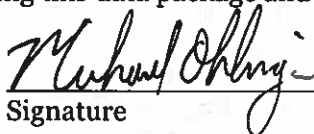
This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Michael Ohlinger
Name (printed)


Signature

Chemist
Official Title

05/06/2024
Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 05/06/2024
Laboratory Job Number: 241148
Prep Batch Number(s): QC2404077

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

TDS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Landfill
Reviewer Name: Michael Ohlinger
LRC Date: 05/06/2024
Laboratory Job Number: 241148
Prep Batch Number(s): QC2404077

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-1

Customer Description:

Lab Number: 242778-001

Preparation:

Date Collected: 09/10/2024 10:35 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.029	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Arsenic	0.19	µg/L	1	0.10	0.03		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Barium	83.9	µg/L	1	0.20	0.05		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Beryllium	2.2	µg/L	50	2.5	0.4	J1	ELT	09/20/2024 11:34	EPA 200.8-1994, Rev. 5.4
Boron	0.973	mg/L	1	0.050	0.007		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Cadmium	0.039	µg/L	1	0.020	0.004		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Calcium	7.75	mg/L	1	0.05	0.02		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Chromium	0.44	µg/L	1	0.30	0.07		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Cobalt	4.72	µg/L	1	0.020	0.005		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Lead	0.21	µg/L	1	0.20	0.05		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Lithium	0.011	mg/L	50	0.015	0.003	J1	ELT	09/20/2024 11:34	EPA 200.8-1994, Rev. 5.4
Mercury	2	ng/L	1	5	2	J1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Selenium	11.3	µg/L	1	0.50	0.04		ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4
Thallium	0.06	µg/L	1	0.20	0.02	J1	ELT	09/19/2024 17:35	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	3.74	pCi/L	0.45	0.37		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	94.4	%						
Radium-228	0.96	pCi/L	0.12	0.37		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	94.6	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-5

Customer Description:

Lab Number: 242778-002

Preparation:

Date Collected: 09/10/2024 09:40 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Arsenic	1.26	µg/L	1	0.10	0.03		ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Barium	62.3	µg/L	1	0.20	0.05		ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.4	µg/L	50	2.5	0.4	U1	ELT	09/20/2024 11:39	EPA 200.8-1994, Rev. 5.4
Boron	0.039	mg/L	1	0.050	0.007	J1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Cadmium	0.010	µg/L	1	0.020	0.004	J1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Calcium	33.2	mg/L	1	0.05	0.02		ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.30	0.07		ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Cobalt	10.1	µg/L	1	0.020	0.005		ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Lead	0.07	µg/L	1	0.20	0.05	J1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Lithium	0.152	mg/L	50	0.015	0.003		ELT	09/20/2024 11:39	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Selenium	0.06	µg/L	1	0.50	0.04	J1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 17:40	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.74	pCi/L	0.23	0.43		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	77.2	%						
Radium-228	1.36	pCi/L	0.13	0.39		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	91.4	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-17

Customer Description:

Lab Number: 242778-003

Preparation:

Date Collected: 09/10/2024 12:06 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Arsenic	0.35	µg/L	1	0.10	0.03		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Barium	14.0	µg/L	1	0.20	0.05		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Beryllium	0.035	µg/L	1	0.050	0.007	J1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Boron	0.106	mg/L	1	0.050	0.007		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Cadmium	0.014	µg/L	1	0.020	0.004	J1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Calcium	172	mg/L	1	0.05	0.02		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Chromium	0.31	µg/L	1	0.30	0.07		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Cobalt	42.6	µg/L	1	0.020	0.005		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Lead	0.06	µg/L	1	0.20	0.05	J1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Lithium	0.254	mg/L	1	0.00030	0.00006		ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Mercury	3	ng/L	1	5	2	J1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 17:45	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	4.95	pCi/L	0.51	0.27		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.0	%						
Radium-228	1.04	pCi/L	0.12	0.38		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	87.6	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Duplicate - Background

Customer Description:

Lab Number: 242778-004

Preparation:

Date Collected: 09/10/2024 12:00 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.033	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Arsenic	0.19	µg/L	1	0.10	0.03		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Barium	83.8	µg/L	1	0.20	0.05		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Beryllium	2.2	µg/L	50	2.5	0.4	J1	ELT	09/20/2024 11:44	EPA 200.8-1994, Rev. 5.4
Boron	0.988	mg/L	1	0.050	0.007		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Cadmium	0.044	µg/L	1	0.020	0.004		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Calcium	7.94	mg/L	1	0.05	0.02		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Chromium	0.37	µg/L	1	0.30	0.07		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Cobalt	4.97	µg/L	1	0.020	0.005		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Lead	0.21	µg/L	1	0.20	0.05		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Lithium	0.011	mg/L	50	0.015	0.003	J1	ELT	09/20/2024 11:44	EPA 200.8-1994, Rev. 5.4
Mercury	2	ng/L	1	5	2	J1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Selenium	11.7	µg/L	1	0.50	0.04		ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4
Thallium	0.06	µg/L	1	0.20	0.02	J1	ELT	09/19/2024 17:50	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Equipment Blank - Background

Customer Description:

Lab Number: 242778-005

Preparation:

Date Collected: 09/10/2024 10:11 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/20/2024 12:40	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Chromium	0.29	µg/L	1	0.30	0.07	J1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELT	09/20/2024 12:40	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 17:55	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Field Blank - Background

Customer Description:

Lab Number: 242778-006

Preparation:

Date Collected: 09/10/2024 10:09 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/20/2024 12:46	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Chromium	0.25	µg/L	1	0.30	0.07	J1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELT	09/20/2024 12:46	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 18:01	EPA 200.8-1994, Rev. 5.4

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242778

Customer: Welsh Power Station

Date Reported: 10/17/2024

Data Qualifier Legend

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

U1 - Not detected at or below method detection limit (MDL).



WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102

Sample Receipt Form Rev. 8.05.23.24

<u>Package Type</u>				<u>Delivery Type</u>	
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	UPS	<input checked="" type="radio"/> FedEX
				USPS	
				Other _____	
Plant/Customer <u>Welsh Background</u>			Total # of Containers RECEIVED in Job: <u>23</u>		
Opened By <u>MWK</u>					
Date/Time <u>9.16.24 11:15am</u>					
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A (Temps) Initial: <u>BLB</u> on ice <input checked="" type="radio"/> no ice					
If No, specify each deviation(s) on back of form. (IR Gun Ser# 240009843 , Expir. 01-03-2026)					
Was container in good condition? <input checked="" type="radio"/> Y / N Comments <u>221821056 10/16/24</u>					
Was Chain of Custody received? <input checked="" type="radio"/> Y / N Comments <u>Mso 9/6/24</u>					
Requested turnaround: <u>Routine</u> 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 pH checked & Color Coding done? Y / N or N/A (pH) Initial & Date: BLB 9.16.24

pH paper:** mfr: LabRat, PN 4801, LOT#X000RWDG21 exp. 11-30-25 * Note changes to pH paper in comments below**

Was Add'l Preservative needed? Y / N If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y / N Comments _____ (See Prep Book)

Was COC filled out properly?	<input checked="" type="radio"/> Y / N	Comments _____
Were samples labeled properly?	<input checked="" type="radio"/> Y / N	Comments _____
Were correct containers used?	<input checked="" type="radio"/> Y / N	Comments _____
Was the customer contacted?	If Yes: Person Contacted: _____	
	Initial & Date & Time: _____	
Lab ID# <u>242717</u>	Comments: _____	
Logged by <u>Mso</u>	_____	
(Record Test Count on back of form)	_____	

Total # of Containers LISTED on COC: <u>23</u>		

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Susann Sulzmann S. Sulzmann Senior Chemist 9-25-24
Name (printed) Signature Official Title Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Station
Reviewer Name: Susann Sulzmann
LRC Date: 09-25-24
Laboratory Job Number: 242778
Prep Batch Number(s): PB24091303

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Mercury Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Station
Reviewer Name: Susann Sulzmann
LRC Date: 09-25-24
Laboratory Job Number: 242778
Prep Batch Number(s): PB24091303

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Elizabeth L. Tinapple	Elizabeth L. Tinapple	<small>Digitally signed by Elizabeth L. Tinapple Date: 2024.10.14 07:45:55 -0400</small>	Chemist	10/14/2024
Name (printed)	Signature		Official Title	Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh CCR
Reviewer Name: Elizabeth L. Tinapple
LRC Date: 10/14/2024
Laboratory Job Number: 242778
Prep Batch Number(s): PB24091804 QC2409126 QC2409133

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh CCR
Reviewer Name: Elizabeth L. Tinapple
LRC Date: 10/14/2024
Laboratory Job Number: 242778
Prep Batch Number(s): PB24091804 QC2409126 QC2409133

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242752

Customer: Welsh Power Station

Date Reported: 10/02/2024

Customer Sample ID: AD-1

Customer Description:

Lab Number: 242752-001

Preparation:

Date Collected: 09/10/2024 10:35 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	3.98	mg/L	2	0.06	0.02		CRJ	09/17/2024 15:56	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.43	mg/L	2	0.06	0.02		CRJ	09/17/2024 15:56	EPA 300.1 -1997, Rev. 1.0
Sulfate	126	mg/L	10	3.0	0.6		CRJ	09/17/2024 12:39	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	260	mg/L	1	50	20		BHB	09/13/2024 10:01	SM 2540C-2015

Customer Sample ID: AD-5

Customer Description:

Lab Number: 242752-002

Preparation:

Date Collected: 09/10/2024 09:40 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	22.5	mg/L	2	0.06	0.02		CRJ	09/17/2024 16:29	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.16	mg/L	2	0.06	0.02		CRJ	09/17/2024 16:29	EPA 300.1 -1997, Rev. 1.0
Sulfate	114	mg/L	10	3.0	0.6		CRJ	09/16/2024 22:32	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	310	mg/L	1	50	20		BHB	09/13/2024 10:01	SM 2540C-2015

Customer Sample ID: AD-17

Customer Description:

Lab Number: 242752-003

Preparation:

Date Collected: 09/10/2024 12:06 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	38.4	mg/L	5	0.15	0.05		CRJ	09/17/2024 17:02	EPA 300.1 -1997, Rev. 1.0
Fluoride	<0.05	mg/L	5	0.15	0.05	U1	CRJ	09/17/2024 17:02	EPA 300.1 -1997, Rev. 1.0
Sulfate	1.110	mg/L	50	15	3		CRJ	09/17/2024 13:12	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1580	mg/L	2	100	40	S7	BHB	09/13/2024 10:08	SM 2540C-2015



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242752

Customer: Welsh Power Station

Date Reported: 10/02/2024

Customer Sample ID: DUPLICATE - BACKGROUND

Customer Description:

Lab Number: 242752-004

Preparation:

Date Collected: 09/10/2024 12:00 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	4.02	mg/L	2	0.06	0.02		CRJ	09/17/2024 18:08	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.43	mg/L	2	0.06	0.02		CRJ	09/17/2024 18:08	EPA 300.1 -1997, Rev. 1.0
Sulfate	125	mg/L	10	3.0	0.6		CRJ	09/17/2024 13:44	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	260	mg/L	1	50	20		BHB	09/13/2024 10:14	SM 2540C-2015

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

Data Qualifier Legend

U1 - Not detected at or below method detection limit (MDL).

S7 - Sample did not achieve constant weight.



WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102

Sample Receipt Form Rev 8.08.23.24

Package Type <input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope			Delivery Type UPS <input checked="" type="radio"/> FedEx USPS Other _____		
Plant/Customer <u>Welsh</u>		Total # of Containers RECEIVED in Job: <u>4</u>			
Opened By <u>MJD/MGW</u>					
Date/Time <u>9/12/24 9:50</u>					
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / <input type="radio"/> N or N/A (Temps) Initial: <u>MGW</u>			<input checked="" type="radio"/> on ice / <input type="radio"/> no ice		
If No, specify each deviation(s) on back of form.			(IR Gun Ser# 240009843 , Expir. 01-03-2026)		
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____			<u>221821056</u> <u>10/12/24</u>		
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N Comments _____			<u>MJD</u> <u>9/16/24</u>		
Requested turnaround: <u>Route</u>			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 pH checked & Color Coding done? Y / N or N/A (pH) Initial & Date: MGW 9/12/24

****pH paper:** mfr: LabRat, PN 4801.LOT#X000RWDG21 exp.11-30-25 **** Note changes to pH paper in comments below**

Was Add'l Preservative needed? Y / N If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y / N Comments _____ (See Prep Book)

Was COC filled out properly?	<input checked="" type="radio"/> Y / <input type="radio"/> N	Comments _____
Were samples labeled properly?	<input checked="" type="radio"/> Y / <input type="radio"/> N	Comments _____
Were correct containers used?	<input checked="" type="radio"/> Y / <input type="radio"/> N	Comments _____
Was the customer contacted?	If Yes: Person Contacted: _____	
	Initial & Date & Time: _____	
Lab ID# <u>242752</u>	Comments: _____	
Logged by <u>MJD</u>	_____	
(Record Test Count on back of form)	_____	

Total # of Containers LISTED on COC: <u>4</u>		

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Tim Arnold

Name (printed)



Signature

Chemist Principle

Official Title

09/18/2024

Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Plant - Background
Reviewer Name: Tim Arnold
LRC Date: 09/18/2024
Laboratory Job Number: 242752
Prep Batch Number(s): QC2409103

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Plant - Background
Reviewer Name: Tim Arnold
LRC Date: 09/18/2024
Laboratory Job Number: 242752
Prep Batch Number(s): QC2409103

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

Ion Chromatography Laboratory Review Checklist

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Plant - Background
Reviewer Name: Tim Arnold
LRC Date: 09/18/2024
Laboratory Job Number: 242752
Prep Batch Number(s): QC2409103

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB<MQL.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
³ NA - Not applicable; NR - Not reviewed.
⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Sandra Williams

Name (printed)

Sandra Williams

Signature

Chemist

Official Title

9/19/2024

Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Landfill
Reviewer Name: Sandra Williams
LRC Date: 9/19/2024
Laboratory Job Number: 242752
Prep Batch Number(s): QC2409104

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

TDS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Landfill
Reviewer Name: Sandra Williams
LRC Date: 05/06/2024
Laboratory Job Number: 242752
Prep Batch Number(s): QC2409104

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-11

Customer Description:

Lab Number: 242776-001

Preparation:

Date Collected: 09/09/2024 11:06 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.013	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Arsenic	1.02	µg/L	1	0.10	0.03		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Barium	12.7	µg/L	1	0.20	0.05		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Beryllium	2.1	µg/L	50	2.5	0.4	J1	ELT	09/20/2024 10:48	EPA 200.8-1994, Rev. 5.4
Boron	1.19	mg/L	1	0.050	0.007		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Cadmium	0.385	µg/L	1	0.020	0.004		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Calcium	11.7	mg/L	1	0.05	0.02		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Chromium	0.43	µg/L	1	0.30	0.07		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Cobalt	18.0	µg/L	1	0.020	0.005		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Lead	1.51	µg/L	1	0.20	0.05		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Lithium	0.034	mg/L	50	0.015	0.003		ELT	09/20/2024 10:48	EPA 200.8-1994, Rev. 5.4
Mercury	6	ng/L	1	5	2		RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Selenium	2.51	µg/L	1	0.50	0.04		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4
Thallium	0.20	µg/L	1	0.20	0.02		ELT	09/19/2024 13:29	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	4.52	pCi/L	0.48	0.39		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.2	%						
Radium-228	1.85	pCi/L	0.13	0.38		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.3	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-13

Customer Description:

Lab Number: 242776-002

Preparation:

Date Collected: 09/09/2024 12:06 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.014	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Arsenic	1.24	µg/L	1	0.10	0.03		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Barium	21.3	µg/L	1	0.20	0.05		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Beryllium	0.6	µg/L	50	2.5	0.4	J1	ELT	09/20/2024 10:53	EPA 200.8-1994, Rev. 5.4
Boron	0.853	mg/L	1	0.050	0.007		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Cadmium	0.103	µg/L	1	0.020	0.004		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Calcium	6.66	mg/L	1	0.05	0.02		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Chromium	0.50	µg/L	1	0.30	0.07		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Cobalt	5.28	µg/L	1	0.020	0.005		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Lead	0.50	µg/L	1	0.20	0.05		ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Lithium	0.054	mg/L	50	0.015	0.003		ELT	09/20/2024 10:53	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2	µg/L	1	0.5	0.1	J1	ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Selenium	0.45	µg/L	1	0.50	0.04	J1	ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4
Thallium	0.14	µg/L	1	0.20	0.02	J1	ELT	09/19/2024 13:34	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.78	pCi/L	0.32	0.49		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	94.4	%						
Radium-228	1.77	pCi/L	0.14	0.40		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	93.8	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-14

Customer Description:

Lab Number: 242776-003

Preparation:

Date Collected: 09/09/2024 11:58 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.013	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Arsenic	0.80	µg/L	1	0.10	0.03		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Barium	21.2	µg/L	1	0.20	0.05		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Beryllium	2.7	µg/L	50	2.5	0.4		ELT	09/20/2024 10:58	EPA 200.8-1994, Rev. 5.4
Boron	1.44	mg/L	1	0.050	0.007		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Cadmium	5.40	µg/L	1	0.020	0.004		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Calcium	13.8	mg/L	1	0.05	0.02		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Chromium	0.66	µg/L	1	0.30	0.07		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Cobalt	40.9	µg/L	1	0.020	0.005		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Lead	0.68	µg/L	1	0.20	0.05		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Lithium	0.028	mg/L	50	0.015	0.003		ELT	09/20/2024 10:58	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Selenium	3.46	µg/L	1	0.50	0.04		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4
Thallium	0.39	µg/L	1	0.20	0.02		ELT	09/19/2024 13:39	EPA 200.8-1994, Rev. 5.4

Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	6.60	pCi/L	0.61	0.37		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.4	%						
Radium-228	1.91	pCi/L	0.12	0.35		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	100	%						

* 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.



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Duplicate

Customer Description:

Lab Number: 242776-004

Preparation:

Date Collected: 09/09/2024 13:27 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.013	µg/L	1	0.100	0.008	J1	ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Arsenic	1.02	µg/L	1	0.10	0.03		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Barium	12.6	µg/L	1	0.20	0.05		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Beryllium	2.2	µg/L	50	2.5	0.4	J1	ELT	09/20/2024 11:03	EPA 200.8-1994, Rev. 5.4
Boron	1.24	mg/L	1	0.050	0.007		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Cadmium	0.406	µg/L	1	0.020	0.004		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Calcium	11.8	mg/L	1	0.05	0.02		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Chromium	0.63	µg/L	1	0.30	0.07		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Cobalt	18.4	µg/L	1	0.020	0.005		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Lead	1.53	µg/L	1	0.20	0.05		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Lithium	0.035	mg/L	50	0.015	0.003		ELT	09/20/2024 11:03	EPA 200.8-1994, Rev. 5.4
Mercury	6	ng/L	1	5	2		RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Selenium	2.55	µg/L	1	0.50	0.04		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4
Thallium	0.20	µg/L	1	0.20	0.02		ELT	09/19/2024 13:50	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Equipment Blank - Landfill

Customer Description:

Lab Number: 242776-005

Preparation:

Date Collected: 09/09/2024 11:43 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Chromium	0.32	µg/L	1	0.30	0.07		ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Cobalt	0.008	µg/L	1	0.020	0.005	J1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2	U1	RLP	09/17/2024 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 13:55	EPA 200.8-1994, Rev. 5.4



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Field Blank - Landfill

Customer Description:

Lab Number: 242776-006

Preparation:

Date Collected: 09/09/2024 11:41 EDT

Date Received: 09/16/2024 11:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.008	µg/L	1	0.100	0.008	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Calcium	0.02	mg/L	1	0.05	0.02	J1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Chromium	0.30	µg/L	1	0.30	0.07		ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00006	mg/L	1	0.00030	0.00006	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/19/2024 14:00	EPA 200.8-1994, Rev. 5.4

242776-003

Comments:

Hg bottle received broken



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242776

Customer: Welsh Power Station

Date Reported: 10/17/2024

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

Data Qualifier Legend

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

U1 - Not detected at or below method detection limit (MDL).



WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102

Sample Receipt Form Rev 8.08.23.24

<u>Package Type</u>			<u>Delivery Type</u>			
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	UPS	<input checked="" type="radio"/> FedEx	<input type="radio"/> USPS
				Other _____		
Plant/Customer <u>Welsh Landfill</u>			Total # of Containers RECEIVED in Job: <u>23</u>			
Opened By <u>MWK</u>			1 of them was broken			
Date/Time <u>9.16.24 11:15am</u>						
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A (Temps) Initial: <u>BLB</u> on ice <input checked="" type="radio"/> no ice						
If No, specify each deviation(s) on back of form. (IR Gun Ser # 240009848 , Expir. 01-03-2026)						
Was container in good condition? Y <input checked="" type="radio"/> N <input type="radio"/> Comments <u>AD.14 Hg bottle broken MSO 9/16/24</u>						
Was Chain of Custody received? <input checked="" type="radio"/> Y / N <input type="radio"/> Comments <u>MSO 9/16/24</u>						
Requested turnaround: <u>Routine</u> 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 pH checked & Color Coding done? Y / N or N/A (pH) Initial & Date: MWK 9.16.24

****pH paper** mfr: LabRat, PN 4801, LOT#X000RWDG21 exp. 11-30-25 **** Note changes to pH paper in comments below**

Was Add'l Preservative needed? Y N If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y N Comments _____ (See Prep Book)

Was COC filled out properly?	<input checked="" type="radio"/> Y / N <input type="radio"/>	Comments _____
Were samples labeled properly?	<input checked="" type="radio"/> Y / N <input type="radio"/>	Comments _____
Were correct containers used?	<input checked="" type="radio"/> Y / N <input type="radio"/>	Comments _____
Was the customer contacted?	If Yes: Person Contacted: _____	
	Initial & Date & Time: _____	
Lab ID# <u>242776</u>	Comments: _____	
Logged by <u>MSO</u>	_____	
(Record Test Count on back of form)	_____	

Total # of Containers LISTED on COC: <u>23</u>		

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Susann Sulzmann

Name (printed)

S. Sulzmann

Signature

Senior Chemist

Official Title

9-25-24

Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Station
Reviewer Name: Susann Sulzmann
LRC Date: 09-25-24
Laboratory Job Number: 242776
Prep Batch Number(s): PB24091303

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Mercury Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Station
Reviewer Name: Susann Sulzmann
LRC Date: 09-25-24
Laboratory Job Number: 242776
Prep Batch Number(s): PB24091303

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

ICP-MS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Jonathan Barnhill		Lab Supervisor	10/9/2024
Name (printed)	Signature	Official Title	Date

ICP-MS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh CCR
Reviewer Name: Jonathan Barnhill
LRC Date: 10/9/2024
Laboratory Job Number: 242776
Prep Batch Number(s): PB24091804 QC2409126 QC2409133

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

ICP-MS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh CCR

Reviewer Name: Jonathan Barnhill

LRC Date: 10/9/2024

Laboratory Job Number: 242776

Prep Batch Number(s): PB24091804 QC2409126 QC2409133

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

ICP-MS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242843

Customer: Welsh Power Station

Date Reported: 10/23/2024

Customer Sample ID: AD-14

Customer Description:

Lab Number: 242843-001

Preparation:

Date Collected: 09/19/2024 09:52 EDT

Date Received: 09/23/2024 15:00 EDT

Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Mercury	500	ng/L	20	100	40		RLP	10/01/2024 00:00	EPA 245.7-2005, Rev. 2.0

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102

Sample Receipt Form Rev. 8.08.23.24

<u>Package Type</u>			<u>Delivery Type</u>			
<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	<input type="radio"/> Bag	<input type="radio"/> Envelope	UPS	<input checked="" type="radio"/> FedEX	<input type="radio"/> USPS
			Other _____			
Plant/Customer <u>Welsh</u>			Total # of Containers RECEIVED in Job: <u>1</u>			
Opened By <u>BLB</u>						
Date/Time <u>9.23.24 3:30pm</u>						
Were all temperatures within 0-6°C? Y / N or <input checked="" type="radio"/> N/A (Temps) Initial: <u>BLB</u>			on ice <input checked="" type="radio"/> no ice			
If No, specify each deviation(s) on back of form.			(IR Gun Ser# 240009843, Expir. 01-03-2026)			
Was container in good condition? <input checked="" type="radio"/> Y / N			Comments _____			
Was Chain of Custody received? <input checked="" type="radio"/> Y / N			Comments _____			
Requested turnaround: <u>Routine</u>			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 pH checked & Color Coding done? Y / N or N/A (pH) Initial & Date: JLD 9.23.24

****pH paper:** mfr: LabRat, PN 4801, LOT#X000RWDG21 exp. 11-30-25 **** Note changes to pH paper in comments below**

Was Add'l Preservative needed? Y N If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y N Comments _____ (See Prep Book)

Was COC filled out properly?	<input checked="" type="radio"/> Y / N	Comments _____
Were samples labeled properly?	<input checked="" type="radio"/> Y / N	Comments _____
Were correct containers used?	<input checked="" type="radio"/> Y / N	Comments _____
Was the customer contacted?	If Yes: Person Contacted: _____	
	Initial & Date & Time: _____	
Lab ID# <u>242843</u>	Comments: _____	
Logged by <u>MSS</u>	_____	
(Record Test Count on back of form)	_____	

Total # of Containers LISTED on COC: <u>1</u>		

Mercury Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

<u>Susann Sulzmann</u>	<u>Susann Sulzmann</u>	<u>Senior Chemist</u>	<u>10-21-24</u>
Name (printed)	Signature	Official Title	Date

Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Station
Reviewer Name: Susann Sulzmann
LRC Date: 10-21-24
Laboratory Job Number: 243843
Prep Batch Number(s): PB2410009

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Mercury Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Power Station
Reviewer Name: Susann Sulzmann
LRC Date: 10-21-24
Laboratory Job Number: 243843
Prep Batch Number(s): PB2410009

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Mercury Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242750

Customer: Welsh Power Station

Date Reported: 09/27/2024

Customer Sample ID: AD-11

Customer Description:

Lab Number: 242750-001

Preparation:

Date Collected: 09/09/2024 11:06 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.2	mg/L	2	0.06	0.02		CRJ	09/13/2024 20:00	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.60	mg/L	2	0.06	0.02		CRJ	09/13/2024 20:00	EPA 300.1 -1997, Rev. 1.0
Sulfate	486	mg/L	25	8	2		CRJ	09/13/2024 15:36	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	770	mg/L	1	50	20		BHB	09/13/2024 09:36	SM 2540C-2015

Customer Sample ID: AD-13

Customer Description:

Lab Number: 242750-002

Preparation:

Date Collected: 09/09/2024 12:06 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	8.44	mg/L	2	0.06	0.02		CRJ	09/13/2024 20:33	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.13	mg/L	2	0.06	0.02		CRJ	09/13/2024 20:33	EPA 300.1 -1997, Rev. 1.0
Sulfate	154	mg/L	10	3.0	0.6		CRJ	09/13/2024 17:15	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	310	mg/L	1	50	20		BHB	09/13/2024 09:36	SM 2540C-2015

Customer Sample ID: AD-14

Customer Description:

Lab Number: 242750-003

Preparation:

Date Collected: 09/09/2024 11:58 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	8.87	mg/L	2	0.06	0.02		CRJ	09/13/2024 22:11	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.32	mg/L	2	0.06	0.02		CRJ	09/13/2024 22:11	EPA 300.1 -1997, Rev. 1.0
Sulfate	337	mg/L	10	3.0	0.6		CRJ	09/13/2024 17:48	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	580	mg/L	1	50	20		BHB	09/13/2024 09:42	SM 2540C-2015



Water Analysis Report

Dolan Chemical Laboratory
4001 Bixby Road
Groveport, OH 43125
Phone: 614-836-4221
Audinet: 210-4221

Job ID: 242750

Customer: Welsh Power Station

Date Reported: 09/27/2024

Customer Sample ID: DUPLICATE - LANDFILL

Customer Description:

Lab Number: 242750-004

Preparation:

Date Collected: 09/09/2024 13:27 EDT

Date Received: 09/12/2024 09:50 EDT

Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	10.2	mg/L	2	0.06	0.02		CRJ	09/13/2024 21:38	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.59	mg/L	2	0.06	0.02		CRJ	09/13/2024 21:38	EPA 300.1 -1997, Rev. 1.0
Sulfate	485	mg/L	25	8	2		CRJ	09/13/2024 16:09	EPA 300.1 -1997, Rev. 1.0

Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	770	mg/L	1	50	20		BHB	09/13/2024 09:42	SM 2540C-2015

Report Verification

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com

Phone: 614-836-4184

Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



WATER & WASTE SAMPLE RECEIPT FORM

Form SOP-7102

Sample Receipt Form Rev 8.05.23.24

<u>Package Type</u> <input checked="" type="radio"/> Cooler <input type="radio"/> Box <input type="radio"/> Bag <input type="radio"/> Envelope			<u>Delivery Type</u> UPS <input checked="" type="radio"/> FedEx USPS Other _____		
Plant/Customer <u>B. Welsh</u>		Total # of Containers RECEIVED in Job: <u>4</u>			
Opened By <u>MSS</u>					
Date/Time <u>9/12/24 9:50</u>					
Were all temperatures within 0-6°C? <input checked="" type="radio"/> Y / <input type="radio"/> N or N/A (Temps) Initial: <u>MLK</u>		or <input checked="" type="radio"/> ice / no ice			
If No, specify each deviation(s) on back of form.		(IR Gun Ser# 240009843 , Expir. 01-03-2026)			
Was container in good condition? <input checked="" type="radio"/> Y / <input type="radio"/> N		Comments <u>221821056 10/12/24</u>			
Was Chain of Custody received? <input checked="" type="radio"/> Y / <input type="radio"/> N		Comments <u>MSS 9/6/24</u>			
Requested turnaround: <u>Routine</u>		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 pH checked & Color Coding done? Y / N or N/A (pH) Initial & Date: MLK 9/12/24

****pH paper:** mfr:LabRat,PN 4801,LOT#X000R/WDG21 exp.11-30-25 **** Note changes to pH paper in comments below**

Was Add'l Preservative needed? Y / N If Yes: By whom & when: _____ (See Prep Book)

(Dissolved) Is sample filtration requested? Y / N Comments _____ (See Prep Book)

Was COC filled out properly?	<input checked="" type="radio"/> Y / <input type="radio"/> N	Comments _____
Were samples labeled properly?	<input checked="" type="radio"/> Y / <input type="radio"/> N	Comments _____
Were correct containers used?	<input checked="" type="radio"/> Y / <input type="radio"/> N	Comments _____
Was the customer contacted?	If Yes: Person Contacted: _____	
Lab ID# <u>242750</u>	Initial & Date & Time: _____	
Logged by <u>MSS</u>	Comments: <u>"Duplicate - Landfill" just says</u>	
(Record Test Count on back of form)	<u>"Duplicate" on bottle. The only way we could tell if was correct was due to the collection time.</u>	
Total # of Containers LISTED on COC: <u>4</u>		

Ion Chromatography Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Tim Arnold		Chemist Principle	9/16/2024
Name (printed)	Signature	Official Title	Date

Ion Chromatography Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Plant - CCR Landfill
Reviewer Name: Tim Arnold
LRC Date: 9/16/2024
Laboratory Job Number: 242750
Prep Batch Number(s): QC2409087

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Ion Chromatography Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Plant - CCR Landfill
Reviewer Name: Tim Arnold
LRC Date: 9/16/2024
Laboratory Job Number: 242750
Prep Batch Number(s): QC2409087

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Ion Chromatography Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

TDS Laboratory Review Checklist

Municipal Solid Waste Laboratory Review Checklist

This data package consists of:

- This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.
- R1 Field chain-of-custody documentation
- R2 Sample identification cross-reference
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard
 - (b) Dilution factors
 - (c) Preparation methods
 - (d) Cleanup methods
 - (e) If required for the project, tentatively identified compounds (TICs)
- R4 Surrogate recovery data including:
 - (a) Calculated recovery (%R)
 - (b) The laboratory's surrogate QC limits
- R5 Test reports/summary forms for blank samples
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - (a) LCS spiking amounts
 - (b) Calculated %R for each analyte
 - (c) The laboratory's LCS QC limits
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - (a) Samples associated with the MS/MSD clearly identified
 - (b) MS/MSD spiking amounts
 - (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples
 - (d) Calculated %Rs and relative percent differences (RPDs)
 - (e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - (a) The amount of analyte measured in the duplicate
 - (b) The calculated RPD
 - (c) The laboratory's QC limits for analytical duplicates
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix
- R10 Other problems or anomalies
- The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)

Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Sandra Williams

Sandra Williams

Chemist

9/19/2024

Name (printed)

Signature

Official Title

Date

TDS Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Landfill

Reviewer Name: Sandra Williams

LRC Date: 9/19/2024

Laboratory Job Number: 242750

Prep Batch Number(s): QC2409104

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	O	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

TDS Laboratory Review Checklist

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Landfill
Reviewer Name: Sandra Williams
LRC Date: 05/06/2024
Laboratory Job Number: 242750
Prep Batch Number(s): QC2409104

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
S3	O	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	O	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

TDS Laboratory Review Checklist

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	O	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	