

# **Annual Groundwater Monitoring Report**

Southwestern Electric Power Company

Welsh Power Plant

**Primary Bottom Ash Pond**

**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

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Columbus, Ohio 43215



An **AEP** Company

BOUNDLESS ENERGY™

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**Abbreviations:**

ASD - Alternate Source Demonstration

CCR – Coal Combustion Residual

GWPS - Groundwater protection standards

PBAP – Primary Bottom Ash Pond

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, 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 PBAP was operating under the Assessment monitoring program.
- At the end of the current annual reporting period, the PBAP was operating under the Assessment monitoring program.
- The PBAP initiated an assessment monitoring program on April 13, 2018.
- Groundwater samples and elevations were collected for AD-1, AD-5, AD-17, AD-8, AD-9, and AD-15 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)*.
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units.
- Annual groundwater sampling was conducted in February 2024;
- The 1<sup>st</sup> semi-annual groundwater sampling event was conducted in April 2024;
  - SSIs above background were identified for:
    - Boron at AD-9
    - pH at AD-8
  - No SSLs above GWPS were identified.
- The 2<sup>nd</sup> semi-annual groundwater sampling event was conducted in September 2024;
  - SSIs above background were identified for:
    - Boron at AD-8
    - pH at AD-15
  - 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 PBAP 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 SSLs, where applicable (Appendix 2);
- A discussion of whether any alternate source demonstrations were performed, and the conclusions, where applicable (Appendix 3);
- A summary of any transition between monitoring programs or an alternate monitoring frequency, if applicable (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, where applicable (Appendix 5,); and
- Other information required to be included in the annual report, 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 figure that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations and their corresponding identification numbers.

Primary Bottom Ash Pond Monitoring Wells	
Background	Down Gradient
AD-1	AD-8
AD-5	AD-9
AD-17	AD-15



Note: ADs 6, 7, and 18 are used for gauging purposes only

## 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-8, AD-9, and AD-15 and analyzed for Appendix III and IV constituents, as specified in §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, tables showing groundwater velocity, and all the groundwater quality data collected to date under 30 TAC 352.951.

**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 parameters was conducted February 26, 2024, and satisfies the requirement of 30 TAC 352.951.

The 1<sup>st</sup> 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-9
  - pH at AD-8
  
- No SSLs above GWPS were identified.

The 2<sup>nd</sup> 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-8
  - pH at AD-15
  
- No SSLs above GWPS were identified.

**VI. Alternate Source Demonstrations**

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.

**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;
- 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 and SSLs above GWPS;
- If needed, ASDs will be conducted to evaluate if the unit can remain in assessment monitoring or the unit will move to an 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

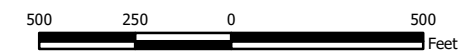
**1**





- 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).



*Beth Ann Gross*

August 19, 2024  
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 No. 1182



**Groundwater Potentiometric Map  
 April 2024**

AEP Welsh Power Plant  
 Cason, Texas

**Geosyntec**  
 consultants

Columbus, Ohio

2024/06/14

Figure

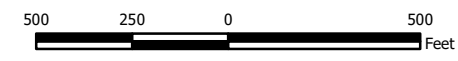
2





- 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).



*Beth Ann Gross*

December 23, 2024  
 Geosyntec Consultants, Inc.  
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**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**

<b>Unit</b>	<b>All Units</b>			<b>Bottom Ash Storage Pond</b>			<b>Primary Bottom Ash Pond</b>			<b>Landfill</b>		
<b>Gradient</b>	<b>Upgradient</b>			<b>Downgradient</b>			<b>Downgradient</b>			<b>Downgradient</b>		
<b>Well</b>	<b>AD-1</b>	<b>AD-5</b>	<b>AD-17</b>	<b>AD-3</b>	<b>AD-4C</b>	<b>AD-16R*</b>	<b>AD-8</b>	<b>AD-9</b>	<b>AD-15</b>	<b>AD-11</b>	<b>AD-13</b>	<b>AD-14</b>
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 Primary Bottom Ash Pond**

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)
Primary Bottom Ash Pond	AD-1 <sup>[1]</sup>	2.0	3.2	18.9	2.8	21.9	2.7	22.4
	AD-5 <sup>[1]</sup>	2.0	2.0	30.0	2.2	27.2	1.7	35.9
	AD-8 <sup>[2]</sup>	2.0	4.0	15.1	4.0	15.2	3.6	17.1
	AD-9 <sup>[2]</sup>	2.0	4.7	13.0	4.6	13.2	4.7	13.0
	AD-15 <sup>[2]</sup>	2.0	6.4	9.6	6.3	9.7	6.8	8.9
	AD-17 <sup>[1]</sup>	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 - PBAP  
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	0.20	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 - PBAP  
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	0.20	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 - PBAP  
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 - PBAP  
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	< 10 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-8**

**Welsh - PBAP**

**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	1.46	32.6	36	0.6507 J1	6.9	217	524
7/28/2016	Background	1.44	25.9	26	0.485 J1	5.4	202	469
9/29/2016	Background	1.51	24.3	28	0.4912 J1	7.7	186	432
10/20/2016	Background	1.54	25.9	30	0.6234 J1	6.1	184	424
12/12/2016	Background	1.53	23.6	27	0.5355 J1	5.6	168	442
1/19/2017	Background	1.53	18.7	24	0.5574 J1	6.2	153	352
2/22/2017	Background	1.67	19.3	22	< 0.083 U1	6.8	163	356
6/6/2017	Background	1.39	17.4	22	0.6628 J1	5.6	151	368
10/5/2017	Detection	1.49	14.9	20	< 0.083 U1	6.7	128	284
1/4/2018	Detection	1.47	--	--	--	--	--	--
5/23/2018	Assessment	--	--	--	0.501 J1	6.2	--	--
8/15/2018	Assessment	--	--	--	--	6.8	--	--
9/17/2018	Assessment	1.30	15.0	24	--	--	122	288
2/5/2019	Assessment	2.55	19.7	22.8	0.72	5.4	153	--
2/21/2019	Assessment	1.47	17.6	23.2	0.66	6.4	163	352
4/30/2019	Assessment	1.21	--	--	--	6.9	--	--
5/29/2019	Assessment	1.07	16.9	19.5	0.89	5.5	150	324
7/23/2019	Assessment	1.21	20.8	15	0.559 J1	6.6	145	392
2/17/2020	Assessment	1.25	14.6	17.0	0.67	6.5	159	344
5/19/2020	Assessment	1.23	15.1	16.5	0.66	6.4	149	336
7/22/2020	Assessment	1.14	--	--	--	6.6	--	--
10/12/2020	Assessment	1.10	17.2	13.6	0.88	6.8	138	298
2/23/2021	Assessment	1.18	14.8	--	0.69	6.1	--	--
6/1/2021	Assessment	1.10	15.3	14.8	0.73	5.3	162	330
10/19/2021	Assessment	1.10	17.2	13.7	0.9	5.5	139	300
3/1/2022	Assessment	1.16	18.7	15.9	0.97	5.9	138	260
6/27/2022	Assessment	1.15	19.5	15.9	0.82	5.9	156	330
10/31/2022	Assessment	1.08	22.3	20.9	0.93	6.1	141	280
2/6/2023	Assessment	1.16	24.6 M1	19.5	0.72	6.3	182	370
6/5/2023	Assessment	0.932	19.3	21.1	0.86	6.1	155	300
10/3/2023	Assessment	1.06	18.9	21.5	0.94	6.7	137	310
2/26/2024	Assessment	1.05	17.8	22.4	0.82	6.5	145	300
4/1/2024	Assessment	0.989	18.0	22.9	0.75	6.6	146	300
9/9/2024	Assessment	0.996	22.4	19.4	0.87	6.7	150	300



**Table 1. Groundwater Data Summary: AD-8  
Welsh - PBAP  
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	1.06251 J1	34	0.114491 J1	< 0.07 U1	2	7	1.046	0.6507 J1	< 0.68 U1	0.122	0.02103 J1	1.01326 J1	1.37017 J1	1.18455 J1
7/28/2016	Background	1.46141 J1	< 1.05 U1	26	0.171642 J1	< 0.07 U1	0.751164 J1	9	1.584	0.485 J1	< 0.68 U1	0.098	0.00859 J1	1.48301 J1	1.96333 J1	< 0.86 U1
9/29/2016	Background	< 0.93 U1	< 1.05 U1	23	< 0.02 U1	< 0.07 U1	0.51348 J1	7	6.30	0.4912 J1	< 0.68 U1	0.111	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/20/2016	Background	< 0.93 U1	< 1.05 U1	24	0.028758 J1	< 0.07 U1	0.617826 J1	7	0.3449	0.6234 J1	< 0.68 U1	0.135	< 0.005 U1	0.838863 J1	< 0.99 U1	1.64377 J1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	21	< 0.02 U1	< 0.07 U1	< 0.23 U1	7	1.083	0.5355 J1	< 0.68 U1	0.11	0.01007 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	< 1.05 U1	20	< 0.02 U1	< 0.07 U1	< 0.23 U1	6	0.823	0.5574 J1	< 0.68 U1	0.094	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	19	< 0.02 U1	< 0.07 U1	< 0.23 U1	6	0.536	< 0.083 U1	< 0.68 U1	0.092	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	19.08	< 0.02 U1	< 0.07 U1	< 0.23 U1	3.86 J1	1.0735	0.6628 J1	< 0.68 U1	0.09491	0.008 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/23/2018	Assessment	3.19 J1	< 1.05 U1	22.12	< 0.02 U1	< 0.07 U1	< 0.23 U1	3.19 J1	0.3366	0.501 J1	< 0.68 U1	0.0956	< 0.005 U1	< 0.29 U1	1.75 J1	< 0.86 U1
8/15/2018	Assessment	0.01 J1	0.31	21.2	0.008 J1	0.02 J1	0.050	5.36	3.44	--	0.039	0.0555	--	0.16	0.07 J1	0.129
2/21/2019	Assessment	< 0.02 U1	0.57	28.1	0.03 J1	0.03 J1	0.456	2.88	0.417	0.66	0.223	0.0911	< 0.005 U1	< 0.4 U1	0.1 J1	< 0.1 U1
5/29/2019	Assessment	< 0.02 U1	0.37	30.3	< 0.02 U1	0.02 J1	0.1 J1	6.03	0.911	0.89	0.07 J1	0.067	< 0.005 U1	< 0.4 U1	0.06 J1	0.1 J1
7/23/2019	Assessment	< 0.02 U1	0.41	31.0	< 0.02 U1	0.02 J1	0.09 J1	7.07	0.72	0.559 J1	0.08 J1	0.0641	< 0.005 U1	< 0.4 U1	0.08 J1	0.1 J1
2/17/2020	Assessment	< 0.02 U1	0.55	38.9	< 0.02 U1	0.05 J1	0.244	1.02	1.257	0.67	0.1 J1	0.124	< 0.002 U1	< 0.4 U1	0.08 J1	< 0.1 U1
5/19/2020	Assessment	< 0.02 U1	0.27	21.1	< 0.02 U1	0.04 J1	0.2 J1	1.17	0.344	0.66	< 0.05 U1	0.0872	< 0.002 U1	< 0.4 U1	0.07 J1	< 0.1 U1
10/12/2020	Assessment	< 0.02 U1	0.30	25.9	< 0.02 U1	0.04 J1	0.06 J1	5.71	0.267	0.88	0.06 J1	0.0615	< 0.002 U1	< 0.4 U1	0.08 J1	0.1 J1
2/23/2021	Assessment	< 0.02 U1	0.31	24.2	< 0.1 U1	0.03 J1	0.1 J1	0.899	0.544	0.69	0.06 J1	0.104	< 0.002 U1	< 0.4 U1	< 0.03 U1	< 0.1 U1
6/1/2021	Assessment	< 0.02 U1	0.37	47.9	0.01 J1	0.029	0.28	1.04	0.69	0.73	0.07 J1	0.0818	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.05 J1
10/19/2021	Assessment	< 0.02 U1	0.25	23.3	< 0.01 U1	0.021	0.27	4.13	1.15	0.9	< 0.05 U1	0.0690	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.11 J1
3/1/2022	Assessment	< 0.02 U1	0.27	23.6	< 0.04 U1	0.018 J1	0.23	5.10	1.31	0.97	< 0.05 U1	0.0654	< 0.002 Q1, U1	< 0.1 U1	< 0.09 U1	0.13 J1
6/27/2022	Assessment	< 0.02 U1	0.25	26.1	< 0.007 U1	0.018 J1	0.41	3.15	1.39	0.82	0.07 J1	0.0777	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.11 J1
10/31/2022	Assessment	< 0.02 U1	0.25	27.8	0.01 J1	0.038	0.31	8.92	1.10	0.93	< 0.05 U1	0.0559	< 0.002 U1	0.2 J1	< 0.09 U1	0.15 J1
2/6/2023	Assessment	< 0.02 U1	0.28	32.5	0.021 J1	0.031	0.23	5.08	3.47	0.72	0.05 J1	0.0821	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.10 J1
6/5/2023	Assessment	0.012 J1	0.24	25.9	0.011 J1	0.020	0.27 J1	3.65	0.68	0.86	0.12 J1	0.0664	< 0.002 U1	< 0.1 U1	0.07 J1	0.10 J1
10/3/2023	Assessment	0.009 J1	0.21	24.2	< 0.007 U1	0.020	0.40	3.95	1.24	0.94	< 0.05 U1	0.0732	< 0.002 U1	< 0.1 U1	0.05 J1	0.10 J1
2/26/2024	Assessment	0.011 J1	0.22	32.6	< 0.007 U1	0.023	0.24 J1	2.04	0.42	0.82	< 0.05 U1	0.0703	< 0.002 U1	< 0.1 U1	< 0.04 U1	0.10 J1
4/1/2024	Assessment	0.009 J1	0.22	27.4	< 0.007 U1	0.026	0.22 J1	3.16	0.79	0.75	< 0.05 U1	0.0688	< 0.002 U1	< 0.1 U1	0.05 J1	0.09 J1
9/9/2024	Assessment	< 0.008 U1	0.24	30.0	0.008 J1	0.017 J1	0.29 J1	5.74	1.27	0.87	< 0.05 U1	0.0713	< 0.002 U1	< 0.1 U1	0.06 J1	0.13 J1

**Table 1. Groundwater Data Summary: AD-9  
Welsh - PBAP  
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	0.12	229	88	0.4191 J1	6.3	1,352	2,541
7/28/2016	Background	0.105	255	98	0.4339 J1	5.0	1,464	2,564
9/29/2016	Background	0.115	220	86	0.304 J1	4.7	1,301	2,448
10/19/2016	Background	0.109	228	76	0.6227 J1	5.2	1,350	2,494
12/12/2016	Background	0.108	250	92	< 0.083 U1	5.7	1,639	2,667
1/19/2017	Background	0.312	91.1	54	< 0.083 U1	5.4	884	1,360
2/22/2017	Background	0.1	258	86	< 0.083 U1	5.8	1,774	2,662
6/6/2017	Background	0.146	191	19	< 0.083 U1	4.6	105	308
10/5/2017	Detection	0.129	9.64	20	< 0.083 U1	5.8	86	248
5/23/2018	Assessment	--	--	--	< 0.083 U1	5.3	--	--
8/15/2018	Assessment	--	--	--	--	5.0	--	--
9/17/2018	Assessment	0.198	230	103	--	--	1,910	2,694
2/5/2019	Assessment	0.096	133	27.9	0.16	4.2	181	--
2/21/2019	Assessment	1.39	211	89	0.19	5.0	1,350	2,240
4/30/2019	Assessment	0.07	--	--	--	4.5	--	--
5/29/2019	Assessment	0.06 J1	10.1	44.0	0.16	3.6	503	1,758
7/23/2019	Assessment	0.081	222	77	0.5736 J1	6.3	1,701	2,460
2/17/2020	Assessment	0.12	11.5	19.9	0.15	6.0	100	282
5/19/2020	Assessment	0.066	11.3	44.8	0.1 J1	4.9	536	902
10/12/2020	Assessment	0.100	11.8	18.8	0.19	4.8	100	296
2/23/2021	Assessment	0.219	11.6	--	0.21	4.7	--	--
6/1/2021	Assessment	0.221	12.5	16.7	0.19	4.4	118	300
10/19/2021	Assessment	0.226	11.9	31.8	0.19	4.3	374	700
3/1/2022	Assessment	0.148	12.0	18.3	0.15	4.8	109	300
6/27/2022	Assessment	0.174	109	59.8	0.09 J1	4.8	933	1,460
10/31/2022	Assessment	0.109	12.4	16.8	0.17	5.0	122	300
2/6/2023	Assessment	0.337	12.4	15.5	0.17	4.9	137	340
6/6/2023	Assessment	0.083	164	78.3	0.17	5.1	1,230	1,950
10/3/2023	Assessment	0.168	168	75.4	0.1	5.8	1,200	1,910
2/26/2024	Assessment	0.180	11.7	15.9	0.16	5.3	115	300
4/2/2024	Assessment	0.109	132	67.3	0.17	5.6	1,060	1,730
9/8/2024	Assessment	--	--	--	--	5.6	--	--
9/9/2024	Assessment	0.400	14.4	14.6	0.18	--	157	380

**Table 1. Groundwater Data Summary: AD-9  
Welsh - PBAP  
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	51	0.999439 J1	1	< 0.23 U1	27	2.945	0.4191 J1	< 0.68 U1	1.32	0.0194 J1	< 0.29 U1	1.04175 J1	< 0.86 U1
7/28/2016	Background	< 0.93 U1	< 1.05 U1	31	0.726564 J1	2	0.262163 J1	22	1.447	0.4339 J1	< 0.68 U1	1.38	0.045	< 0.29 U1	8	< 0.86 U1
9/29/2016	Background	< 0.93 U1	< 1.05 U1	33	0.582852 J1	0.187457 J1	< 0.23 U1	12	3.199	0.304 J1	< 0.68 U1	1.17	0.00739 J1	< 0.29 U1	3.52832 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	26	0.478576 J1	0.965032 J1	< 0.23 U1	16	1.311	0.6227 J1	< 0.68 U1	1.44	< 0.005 U1	< 0.29 U1	3.09028 J1	< 0.86 U1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	27	0.481339 J1	2	< 0.23 U1	24	3.00	< 0.083 U1	< 0.68 U1	1.33	0.02123 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	< 1.05 U1	98	2	0.693618 J1	< 0.23 U1	42	2.349	< 0.083 U1	< 0.68 U1	0.634	0.00717 J1	< 0.29 U1	< 0.99 U1	1.7755 J1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	22	0.301057 J1	0.680144 J1	< 0.23 U1	24	2.32	< 0.083 U1	< 0.68 U1	1.41	< 0.005 U1	< 0.29 U1	1.06022 J1	1.45295 J1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	42.27	0.77 J1	2.22	< 0.23 U1	24.16	1.586	< 0.083 U1	< 0.68 U1	1	0.006 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	< 1.05 U1	30.45	0.32 J1	2.88	< 0.23 U1	26.7	2.556	< 0.083 U1	< 0.68 U1	1.2	< 0.005 U1	< 0.29 U1	< 0.99 U1	8.46
8/15/2018	Assessment	< 10 U1	1.68	24.2	0.268	0.06	0.420	11.1	1.864	--	0.262	0.851	--	0.11	0.3	0.062
2/21/2019	Assessment	< 0.02 U1	1.18	52.4	0.474	0.09	0.313	14.8	2.51	0.19	0.08 J1	1.12	0.01 J1	< 0.4 U1	0.3	0.1 J1
5/29/2019	Assessment	< 0.02 U1	0.20	49.7	0.941	0.21	0.346	15.9	1.36	0.16	0.07 J1	0.225	< 0.005 U1	< 0.4 U1	0.2	0.2 J1
7/23/2019	Assessment	< 0.02 U1	1.39	32.1	0.361	0.06	0.2 J1	12.7	1.689	0.5736 J1	0.2 J1	1.11	< 0.005 U1	< 0.4 U1	0.4	< 0.1 U1
2/17/2020	Assessment	< 0.02 U1	0.33	52.8	0.979	0.24	0.608	17.7	1.938	0.15	0.2 J1	0.218	0.002 J1	< 0.4 U1	0.3	0.2 J1
5/19/2020	Assessment	< 0.02 U1	0.25	51.6	0.933	0.24	0.458	16.5	1.854	0.1 J1	0.07 J1	0.160	0.003 J1	< 0.4 U1	0.4	0.2 J1
10/12/2020	Assessment	< 0.02 U1	0.72	55.3	1.27	0.22	0.471	18.6	2.838	0.19	0.349	0.194	0.003 J1	< 0.4 U1	0.3	0.2 J1
2/23/2021	Assessment	< 0.02 U1	0.27	54.9	1.51	0.33	0.373	21.7	1.557	0.21	0.1 J1	0.189	0.003 J1	< 0.4 U1	0.4	0.2 J1
6/1/2021	Assessment	< 0.02 U1	0.21	51.6	1.15	0.353	0.59	20.6	1.74	0.19	0.08 J1	0.141	0.003 J1	< 0.1 U1	0.31 J1	0.22
10/19/2021	Assessment	< 0.02 U1	0.30	50.3	1.36	0.315	0.68	20.6	1.74	0.19	0.1 J1	0.184 P3	0.003 J1	< 0.1 U1	0.34 J1	0.23
3/1/2022	Assessment	< 0.02 U1	0.24	55.3	1.20	0.266	0.74	19.1	3.35	0.15	0.08 J1	0.205	0.003 Q1, J1	< 0.1 U1	0.26 J1	0.22
6/27/2022	Assessment	< 0.02 U1	0.87	49.7	0.780	0.244	0.59	19.5	3.52	0.09 J1	0.27	0.539	< 0.002 U1	< 0.1 U1	0.46 J1	0.22
10/31/2022	Assessment	< 0.02 U1	0.21	52.0	1.14	0.199	1.23	17.1	1.06	0.17	0.08 J1	0.231	0.004 J1	< 0.1 U1	0.27 J1	0.22
2/6/2023	Assessment	< 0.02 U1	0.33	49.0	1.60	0.379	0.58	22.1	3.05	0.17	0.18 J1	0.181	0.003 J1	0.1 J1	0.46 J1	0.28
6/6/2023	Assessment	0.008 J1	1.15	39.8	0.502	0.135	0.33	15.8	1.86	0.17	0.12 J1	0.661	< 0.002 U1	< 0.1 U1	0.51	0.14 J1
10/3/2023	Assessment	< 0.008 U1	1.57	37.0	0.788	0.195	0.48	17.4	2.11	0.1	0.47	0.777	< 0.002 U1	< 0.1 U1	0.44 J1	0.16 J1
2/26/2024	Assessment	0.008 J1	0.20	50.6	1.60	0.289	0.67	19.2	1.86	0.16	0.08 J1	0.207	0.003 J1	< 0.1 U1	0.40 J1	0.23
4/2/2024	Assessment	< 0.008 U1	0.83	50.2	0.722	0.224	0.40	19.9	1.35	0.17	0.06 J1	0.576	< 0.002 U1	< 0.1 U1	0.85	0.19 J1
9/9/2024	Assessment	0.010 J1	0.31	50.7	1.76	0.435	0.71	24.9	0.81	0.18	0.08 J1	0.201	0.002 J1	< 0.1 U1	0.61	0.25

**Table 1. Groundwater Data Summary: AD-15**

**Welsh - PBAP**

**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	0.329	5.09	30	< 0.083 U1	5.6	24	188
7/28/2016	Background	0.407	3.83	34	< 0.083 U1	4.8	28	196
9/29/2016	Background	0.36	13.7	28	0.2621 J1	4.6	23	367
10/19/2016	Background	0.152	4.57	26	< 0.083 U1	4.4	17	152
12/12/2016	Background	0.334	3.6	26	< 0.083 U1	4.7	19	204
1/19/2017	Background	0.413	3.35	32	< 0.083 U1	5.8	25	176
2/22/2017	Background	0.1	4.21	20	< 0.083 U1	4.6	8	88
6/6/2017	Background	0.321	3.57	27	< 0.083 U1	4.8	19	184
10/5/2017	Detection	0.395	3.08	30	< 0.083 U1	5.9	21	200
5/23/2018	Assessment	--	--	--	< 0.083 U1	4.8	--	--
8/15/2018	Assessment	--	--	--	--	4.6	--	--
9/17/2018	Assessment	0.341	3.04	37	--	--	24	174
2/5/2019	Assessment	0.03 J1	2.18	20.6	0.06	3.9	0.2 J1	--
2/21/2019	Assessment	0.169	2.67	28.2	0.09	5.0	10.6	150
5/29/2019	Assessment	< 0.02 U1	2.97	21.4	0.06 J1	4.9	2.1	34
7/23/2019	Assessment	0.306	3.45	28	0.086 J1	3.2	18	214
2/17/2020	Assessment	0.419	3.64	34.3	0.11	4.5	21.5	234
5/19/2020	Assessment	0.376	3.37	34.1	0.07	5.3	19.0	216
10/12/2020	Assessment	0.334	2.99	30.4	0.10	5.1	17.1	170
2/23/2021	Assessment	0.03 J1	2.30	--	0.08	4.4	--	--
6/1/2021	Assessment	0.213	3.0	28.4	0.10	4.4	11.4	150
10/19/2021	Assessment	0.218	2.7	28.0	0.09	4.4	10.3	140
3/1/2022	Assessment	0.076	2.63	25.0	0.05 J1	4.4	4.29	80
6/27/2022	Assessment	0.329	3.25	30.9	0.09	4.5	18.9	170
10/31/2022	Assessment	0.093	2.57	26.2	0.07	4.4	4.62	90
2/6/2023	Assessment	0.174	2.70	27.5	0.06	4.3	9.85	130
6/5/2023	Assessment	0.194	2.92	28.6	0.08	4.3	12.4	140
10/3/2023	Assessment	0.179	2.47	27.5	0.06	4.9	9.9	140
2/26/2024	Assessment	0.209	2.81	28.0	0.05 J1	4.1	10.8	140
4/1/2024	Assessment	0.231	3.28	29.2	0.08	4.4	13	130
9/9/2024	Assessment	0.171	2.66	27.8	0.06	3.8	9.1	130

Table 1. Groundwater Data Summary: AD-15

Welsh - PBAP

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	12	215	0.959793 J1	0.351465 J1	17	11	2.284	< 0.083 U1	7	0.017	0.054	1.77432 J1	3.46337 J1	< 0.86 U1
7/28/2016	Background	< 0.93 U1	6	124	0.362598 J1	0.111427 J1	4	6	1.322	< 0.083 U1	< 0.68 U1	0.021	0.01646 J1	0.586779 J1	1.19442 J1	< 0.86 U1
9/29/2016	Background	< 0.93 U1	131	1,930	15	7	280	134	9.92	0.2621 J1	161	0.149	0.707	3.60313 J1	14	< 0.86 U1
10/19/2016	Background	< 0.93 U1	23	415	2	0.575938 J1	54	19	3.567	< 0.083 U1	22	0.036	0.1	1.54555 J1	1.17613 J1	1.55993 J1
12/12/2016	Background	< 0.93 U1	6	184	0.695316 J1	0.246456 J1	15	10	3.36	< 0.083 U1	3.96087 J1	0.013	0.026	0.463544 J1	1.32943 J1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	6	153	0.449612 J1	< 0.07 U1	9	7	2.386	< 0.083 U1	2.87518 J1	0.008	0.01932 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	20	353	2	0.319406 J1	49	20	2.261	< 0.083 U1	19	0.025	0.058	1.42695 J1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	8.54	166	0.61 J1	0.48 J1	12.35	8.44	2.491	< 0.083 U1	2.98 J1	0.0108	0.022 J1	< 0.29 U1	2.71 J1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	2.56 J1	102	0.03 J1	0.1 J1	2.63	4.74 J1	1.46	< 0.083 U1	< 0.68 U1	0.00562	< 0.005 U1	< 0.29 U1	1.54 J1	1.37 J1
8/15/2018	Assessment	0.03 J1	3.26	85.2	0.116	0.01 J1	0.481	3.71	1.076	--	0.438	0.00338	--	0.05 J1	0.9	0.090
2/21/2019	Assessment	< 0.02 U1	2.21	76.6	0.208	0.01 J1	0.225	2.9	0.841	0.09	0.104	0.00294	< 0.005 U1	< 0.4 U1	0.4	< 0.1 U1
5/29/2019	Assessment	0.05 J1	2.95	203	1.50	0.08	9.31	5.49	3.55	0.06 J1	9.85	0.01 J1	0.081	< 0.4 U1	5.1	0.1 J1
7/23/2019	Assessment	0.03 J1	2.10	113	0.573	0.04 J1	2.26	5.41	2.245	0.086 J1	2.87	0.00414	0.025	< 0.4 U1	1.6	< 0.1 U1
2/17/2020	Assessment	0.09 J1	9.12	115	0.39	0.02 J1	6.01	4.08	2.546	0.11	4.8	0.00509	0.013	3.32	1.7	0.1 J1
5/19/2020	Assessment	0.02 J1	3.94	80.3	0.09 J1	0.01 J1	0.2 J1	3.28	1.115	0.07	0.09 J1	0.00383	< 0.002 U1	< 0.4 U1	0.7	< 0.1 U1
10/12/2020	Assessment	0.03 J1	4.90	83.4	0.146	0.01 J1	0.425	3.93	1.604	0.10	0.417	0.00393	0.003 J1	< 0.4 U1	0.7	< 0.1 U1
2/23/2021	Assessment	< 0.02 U1	1.39	72.4	0.190	0.02 J1	0.1 J1	2.61	1.021	0.08	0.08 J1	0.00167	< 0.002 U1	< 0.4 U1	0.2	< 0.1 U1
6/1/2021	Assessment	< 0.02 U1	3.04	76.9	0.138	0.015 J1	0.31	2.73	1.45	0.10	< 0.05 U1	0.00330	< 0.002 U1	< 0.1 U1	0.43 J1	0.05 J1
10/19/2021	Assessment	< 0.02 U1	3.72	73.1	0.143	0.009 J1	0.31	2.84	2.02	0.09	0.07 J1	0.00435	< 0.002 U1	< 0.1 U1	0.55	0.06 J1
3/1/2022	Assessment	< 0.02 U1	1.89	75.1	0.207	0.011 J1	0.55	2.76	2.01	0.05 J1	0.09 J1	0.00208	0.003 Q1, J1	< 0.1 U1	0.29 J1	0.05 J1
6/27/2022	Assessment	< 0.02 U1	3.03	78.5	0.088	0.015 J1	0.38	3.54	2.15	0.09	0.05 J1	0.00573	< 0.002 U1	< 0.1 U1	0.63	0.07 J1
10/31/2022	Assessment	< 0.02 U1	2.55	75.3	0.187	0.015 J1	0.41	2.94	1.67	0.07	0.12 J1	0.00235	< 0.002 U1	< 0.1 U1	0.38 J1	0.05 J1
2/6/2023	Assessment	< 0.02 U1	3.26	73.9	0.162	0.019 J1	0.33	2.77	1.77	0.06	0.15 J1	0.00373	< 0.002 U1	< 0.1 U1	0.45 J1	0.07 J1
6/5/2023	Assessment	0.056 J1	7.67	86.9	0.237	0.024	2.27	3.49	1.37	0.08	1.94	0.00423	0.006	0.1 J1	1.23	0.08 J1
10/3/2023	Assessment	0.014 J1	3.01	69.8	0.139	0.013 J1	0.37	3.06	2.10	0.06	0.08 J1	0.00398	< 0.002 U1	< 0.1 U1	0.54	0.06 J1
2/26/2024	Assessment	0.016 J1	2.83	73.9	0.138	0.011 J1	0.37	3.18	1.53	0.05 J1	0.06 J1	0.00310	< 0.002 U1	< 0.1 U1	0.57	0.06 J1
4/1/2024	Assessment	0.017 J1	3.29	82.5	0.115	0.012 J1	0.42	3.41	1.31	0.08	0.15 J1	0.00403	< 0.002 U1	< 0.1 U1	0.68	0.06 J1
9/9/2024	Assessment	0.013 J1	3.18	75.1	0.180	0.013 J1	0.35	3.32	0.97	0.06	0.18 J1	0.00403	< 0.002 U1	< 0.1 U1	0.58	0.06 J1

**Table 1. Groundwater Data Summary: AD-17**

*Geosyntec Consultants, Inc.*

**Welsh - PBAP**

**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 - PBAP

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 - Primary Bottom Ash Pond**

*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

P3: The precision on the matrix spike duplicate (MSD) 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, PRIMARY BOTTOM ASH POND**

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July 17, 2024

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## 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
PBAP	Primary Bottom Ash Pond
QA/QC	quality assurance and quality control
SSI	statistically significant increase
SSL	statistically significant level
SU	standard units
TCEQ	Texas Commission on Environmental Quality
UPL	upper prediction limit

## 1. INTRODUCTION

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 Primary Bottom Ash Pond (PBAP), 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 at the PBAP. An alternative source was not identified at the time, so assessment monitoring was initiated and GWPS were set in accordance with § 352.951(b) (Geosyntec 2018). Two assessment monitoring events were conducted at the PBAP in February and April 2024 in accordance with § 352.951(a). The results of these assessment 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 parameters 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. Thus, the unit will remain in assessment monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

## 2. PRIMARY BOTTOM ASH POND 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 PBAP 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 PBAP.

### 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-9 (0.989 mg/L).
- The reported pH values were below the interwell LPL of 4.8 SU mg/L at AD-8 (4.4 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 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 exceeded the GWPS. No SSLs were identified. The Appendix III results were compared to previously calculated prediction limits, with values above the UPL detected for boron and with results below the LPL for pH.

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

### 3. REFERENCES

Geosyntec. 2018. Statistical Analysis Summary – Primary Bottom Ash Pond, J. Robert Welsh Plant, Pittsburg, Texas. Geosyntec Consultants, Inc. January.

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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 - Primary Bottom Ash Pond**

Parameter	Unit	AD-1	AD-5	AD-8		AD-9		AD-15		AD-17
		Background	Background	Compliance		Compliance		Compliance		Background
		4/1/2024	4/2/2024	2/26/2024	4/1/2024	2/26/2024	4/2/2024	2/26/2024	4/1/2024	4/1/2024
Antimony	µg/L	0.073 J1	0.015 J1	0.011 J1	0.009 J1	0.008 J1	0.1 U1	0.016 J1	0.017 J1	0.012 J1
Arsenic	µg/L	0.26	2.94	0.22	0.22	0.20	0.83	2.83	3.29	0.34
Barium	µg/L	190 M1	78.4	32.6	27.4	50.6	50.2	73.9	82.5	12.7
Beryllium	µg/L	0.524	0.063	0.05 U1	0.05 U1	1.60	0.722	0.138	0.115	0.023 J1
Boron	mg/L	0.781	0.039 J1	1.05	0.989	0.180	0.109	0.209	0.231	0.096
Cadmium	µg/L	0.032	0.007 J1	0.023	0.026	0.289	0.224	0.011 J1	0.012 J1	0.010 J1
Calcium	mg/L	44.9 M1	26.0	17.8	18.0	11.7	132	2.81	3.28	131
Chloride	mg/L	3.33	32.9	22.4	22.9	15.9	67.3	28.0	29.2	31.8
Chromium	µg/L	0.28 J1	0.26 J1	0.24 J1	0.22 J1	0.67	0.40	0.37	0.42	0.31
Cobalt	µg/L	1.53	11.5	2.04	3.16	19.2	19.9	3.18	3.41	30.3
Combined Radium	pCi/L	2.39	2.34	0.42	0.79	1.86	1.35	1.53	1.31	1.65
Fluoride	mg/L	0.23	0.18	0.82	0.75	0.16	0.17	0.05 J1	0.08	0.13 J1
Lead	µg/L	0.14 J1	0.06 J1	0.2 U1	0.2 U1	0.08 J1	0.06 J1	0.06 J1	0.15 J1	0.07 J1
Lithium	mg/L	0.00378	0.0753	0.0703	0.0688	0.207	0.576	0.00310	0.00403	0.197
Mercury	µg/L	0.005 U1	0.005 U1	0.005 U1	0.005 U1	0.003 J1	0.005 U1	0.005 U1	0.005 U1	0.005 U1
Molybdenum	µg/L	0.3 J1	0.1 J1	0.5 U1	0.5 U1	0.5 U1	0.5 U1	0.5 U1	0.5 U1	0.5 U1
Selenium	µg/L	7.67	0.08 J1	0.5 U1	0.05 J1	0.40 J1	0.85	0.57	0.68	0.32 J1
Sulfate	mg/L	104	41.4	145	146	115	1,060	10.8	13	950
Thallium	µg/L	0.03 J1	0.03 J1	0.10 J1	0.09 J1	0.23	0.19 J1	0.06 J1	0.06 J1	0.2 U1
Total Dissolved Solids	mg/L	310	210	300	300	300	1,730	140	130	1,280
pH	SU	5.7	5.7	6.5	6.6	5.4	5.6	4.1	4.4	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 – Primary Bottom Ash Pond**

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 - Primary Bottom Ash Pond**

Analyte	Unit	Description	AD-8	AD-9	AD-15
			4/1/2024	4/1/2024	4/2/2024
Boron	mg/L	Interwell Background Value (UPL)	0.901		
		Analytical Result	0.231	<b>0.989</b>	0.109
Calcium	mg/L	Intrawell Background Value (UPL)	4.65	28.1	258
		Analytical Result	3.28	18.0	132
Chloride	mg/L	Intrawell Background Value (UPL)	36.9	26.1	117
		Analytical Result	29.2	22.9	67.3
Fluoride	mg/L	Intrawell Background Value (UPL)	0.160	1.06	0.623
		Analytical Result	0.08	0.75	0.17
pH	SU	Interwell Background Value (UPL)	6.9		
		Interwell Background Value (LPL)	4.8		
		Analytical Result	<b>4.4</b>	6.6	5.6
Sulfate	mg/L	Intrawell Background Value (UPL)	30.5	204	2,150
		Analytical Result	13	146	1,060
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	261	489	2,690
		Analytical Result	130	300	1,730

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 Primary Bottom Ash Pond 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

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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. 32<sup>1</sup> 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%

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<sup>1</sup> 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. 32<sup>1</sup> prior to submittal of this data to TCEQ.

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<sup>1</sup> 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.

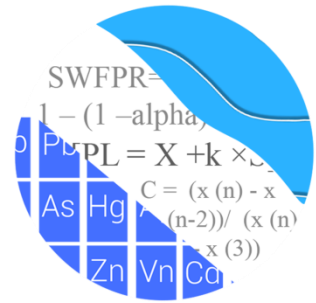
Based on these findings, the majority of the data reported in these SDGs are considered accurate and complete. Although the QC failures mentioned above will result in some limitations of data

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 5, 2024

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

Re: Welsh PBAP – 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 PBAP. 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. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** AD-1, AD-5, and AD-17
- **Downgradient wells:** AD-8, AD-9, and AD-15

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.

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

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. Note that the measured concentrations of most metals for the September 30, 2016 sample event at well AD-15 are elevated compared to the rest of the observations and resulted from turbidity levels of >1000 mg/L. These values were flagged as outliers as the measurements do not represent the population at this well.

### **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 for parametric limits. 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

Upgradient well data were evaluated during the January 2024 analysis on data through October 2023 with 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 no changes to previously flagged outliers for Appendix IV parameters were made. 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 of chromium at well 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 new measurements were flagged among upgradient wells for Appendix IV parameters.

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, such as the spurious observations at AD-15 during the September 2016 event for several constituents. No additional outliers among

downgradient wells 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 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 PBAP. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

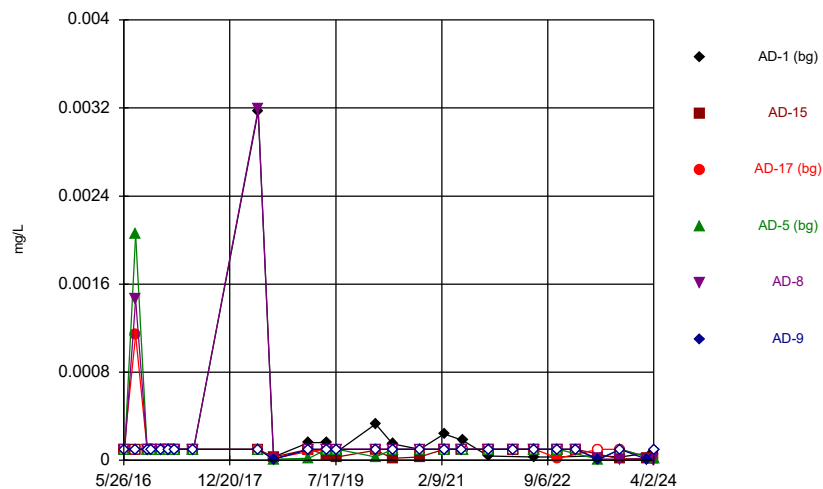


Kristina Rayner  
Senior Statistician

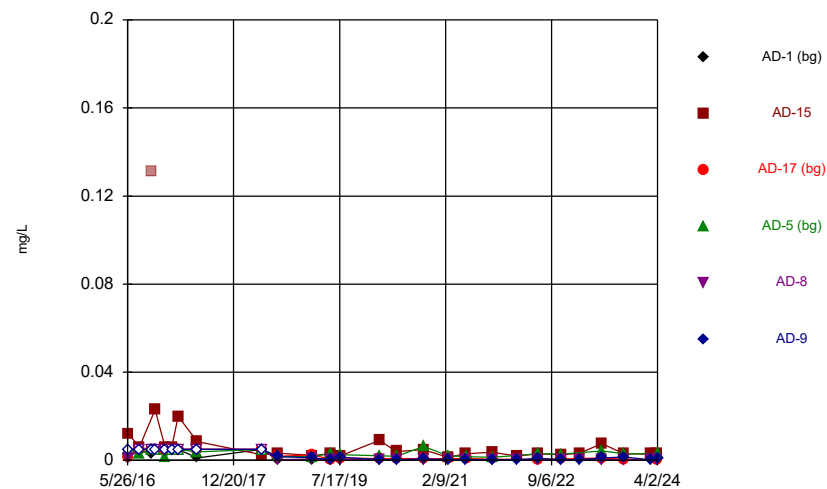


Andrew T. Collins  
Project Manager

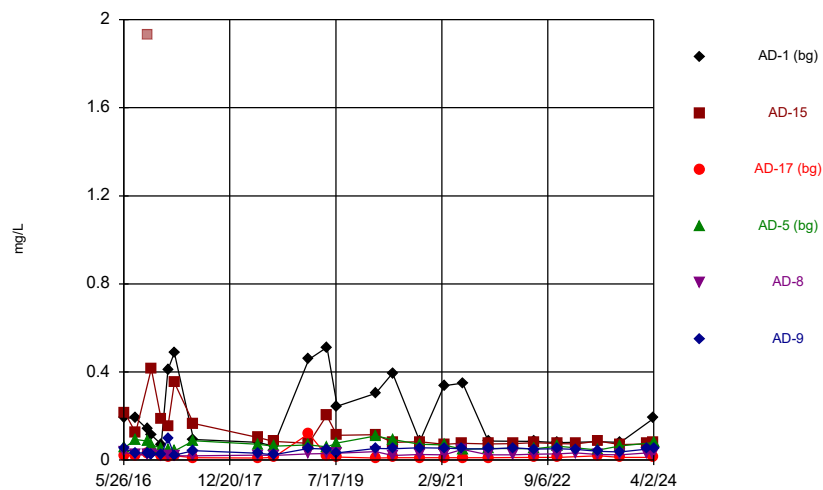
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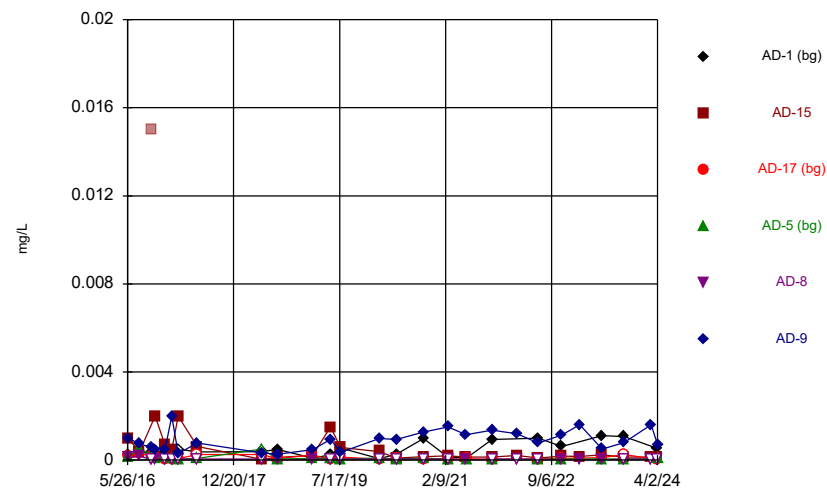
### Time Series



### Time Series

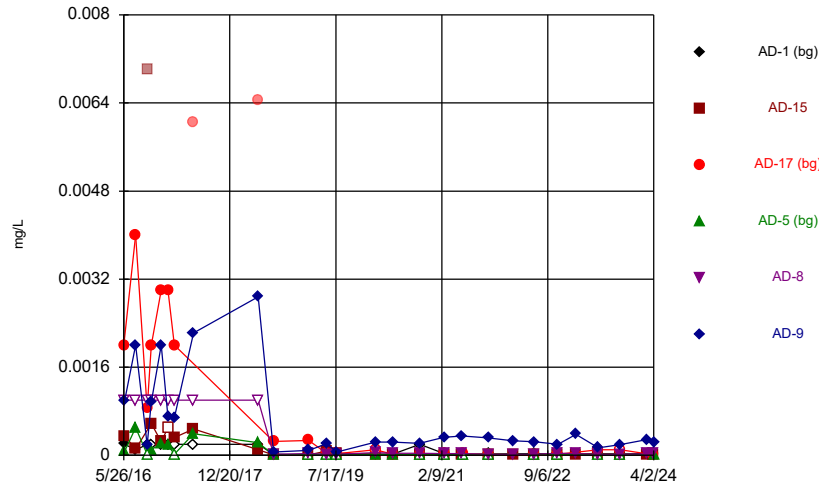


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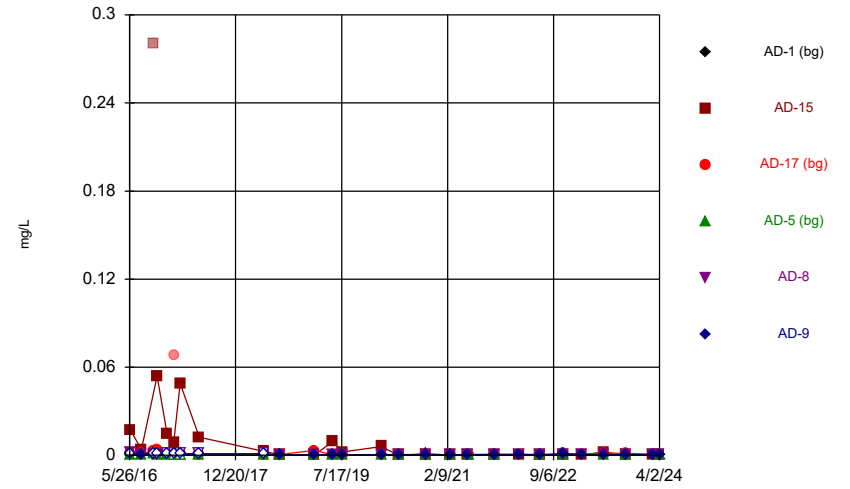


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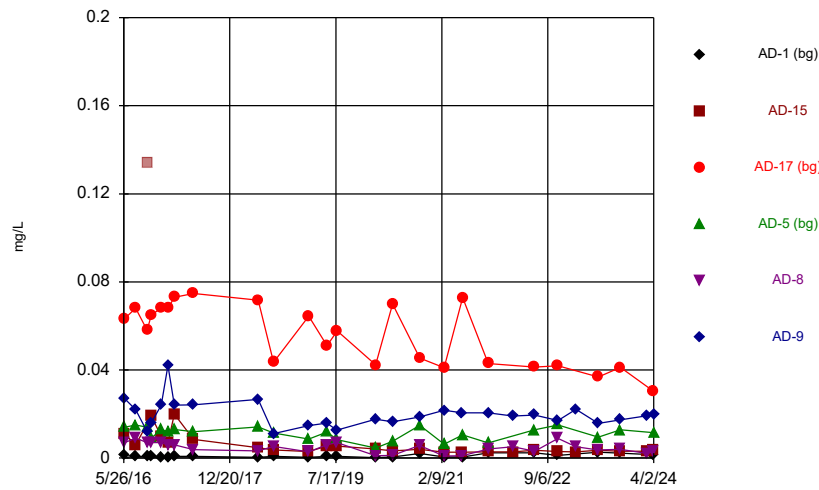
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



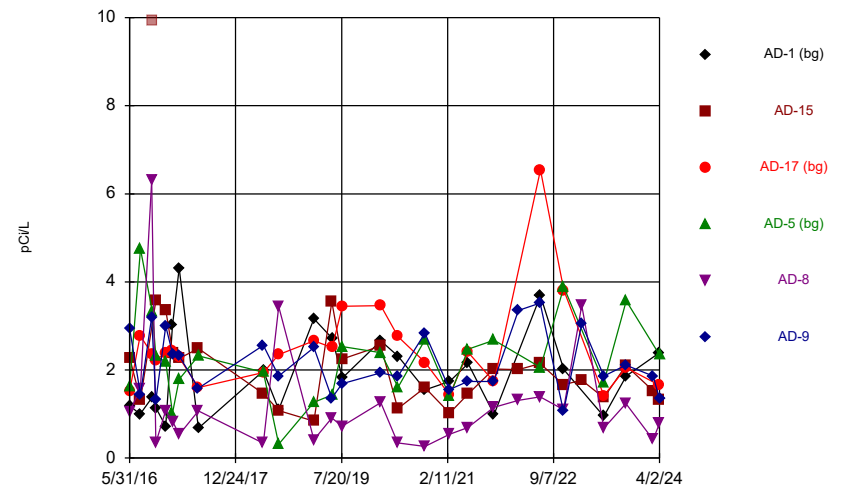
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### Time Series



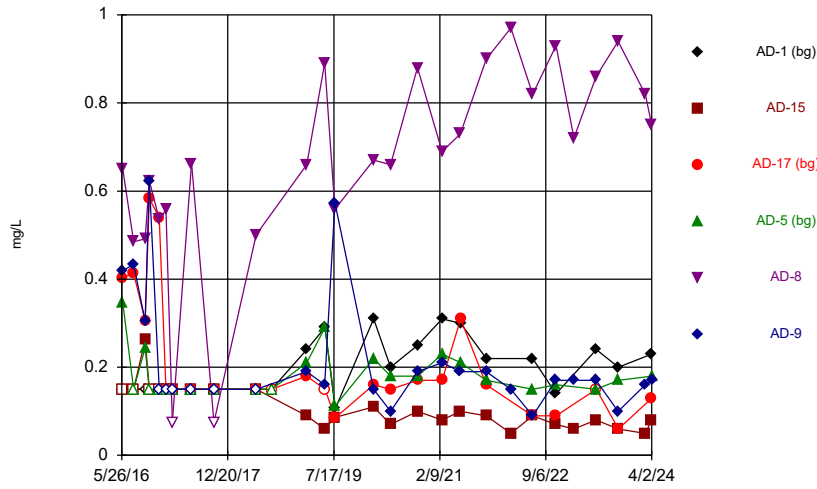
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### Time Series



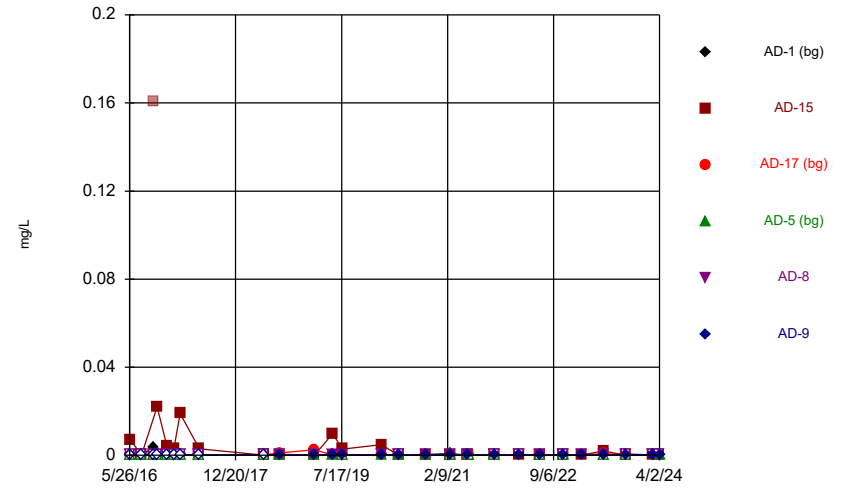
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



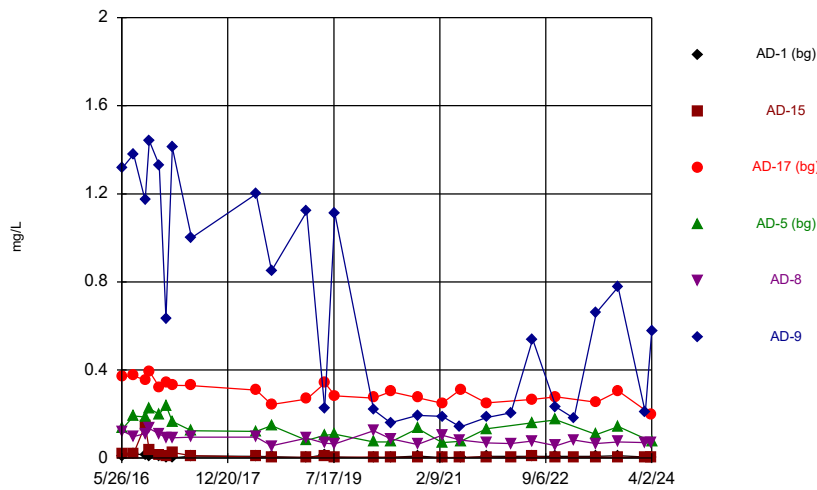
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### Time Series



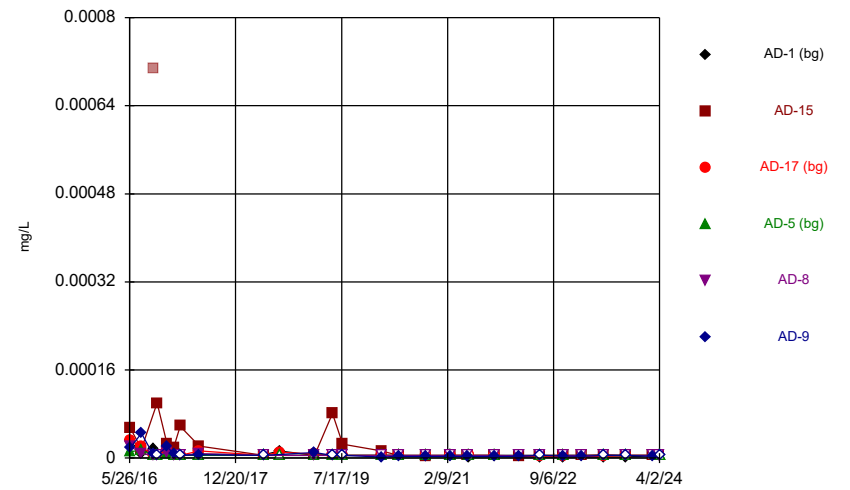
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### Time Series



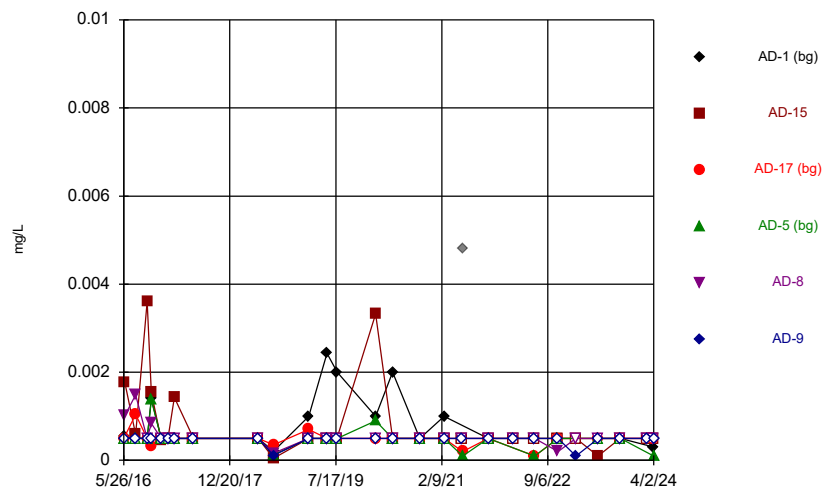
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### Time Series



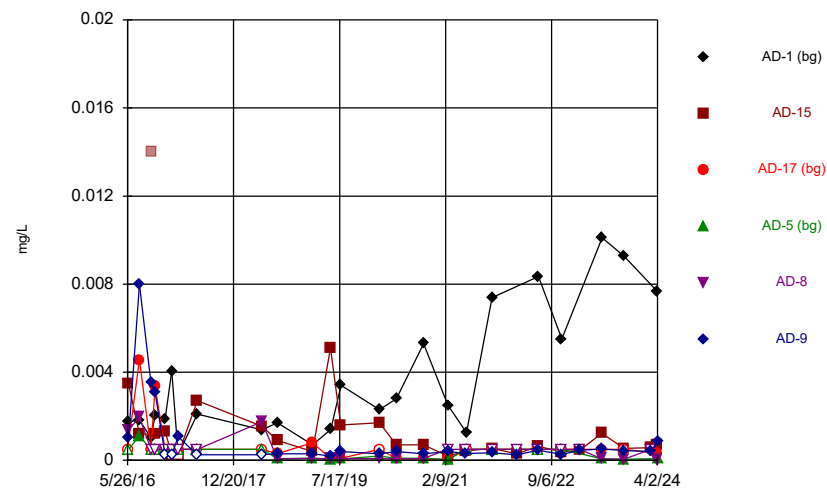
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### Time Series



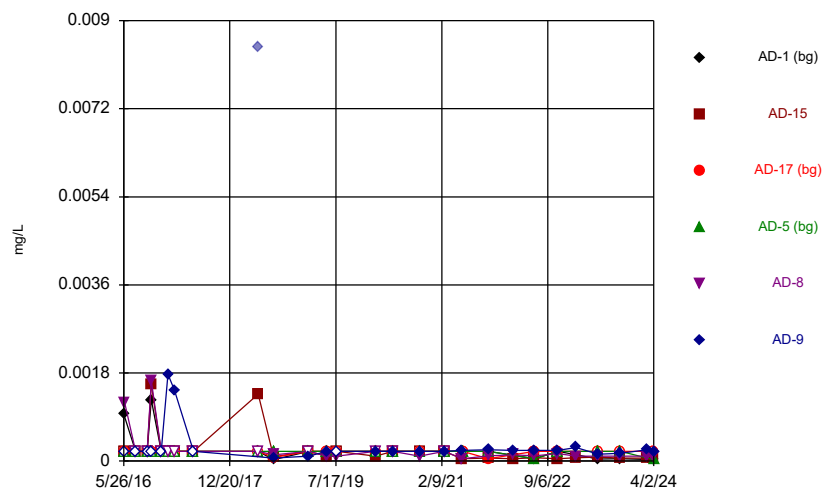
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### Time Series



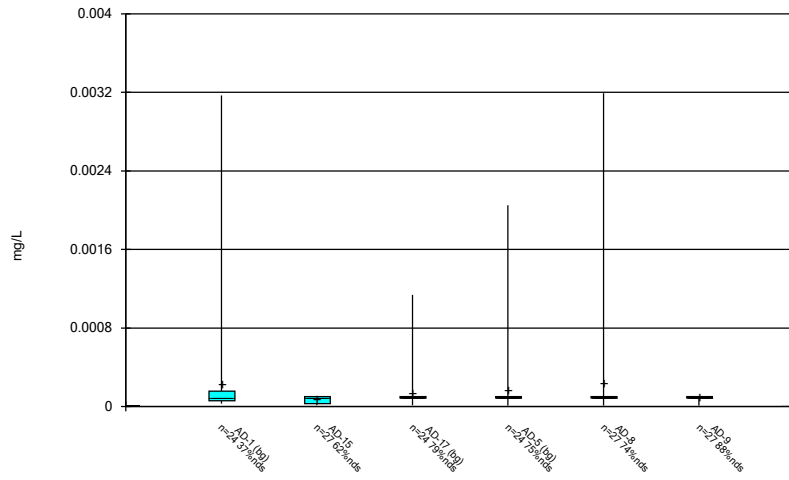
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### Time Series



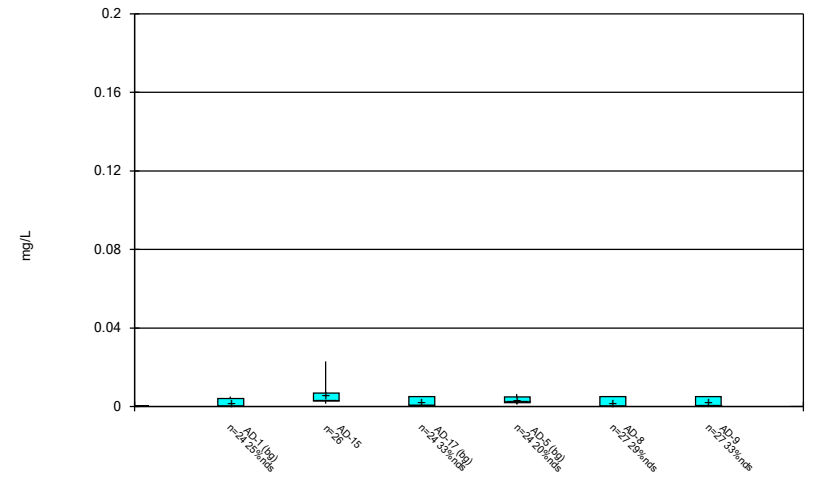
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



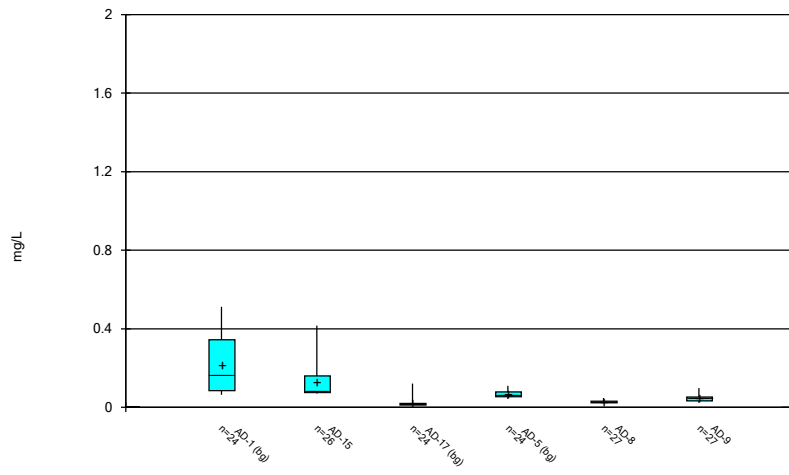
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 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



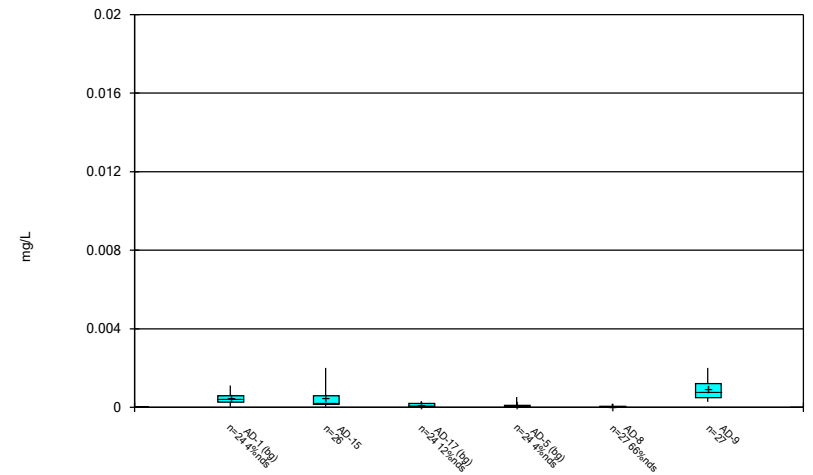
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 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



Constituent: Barium, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

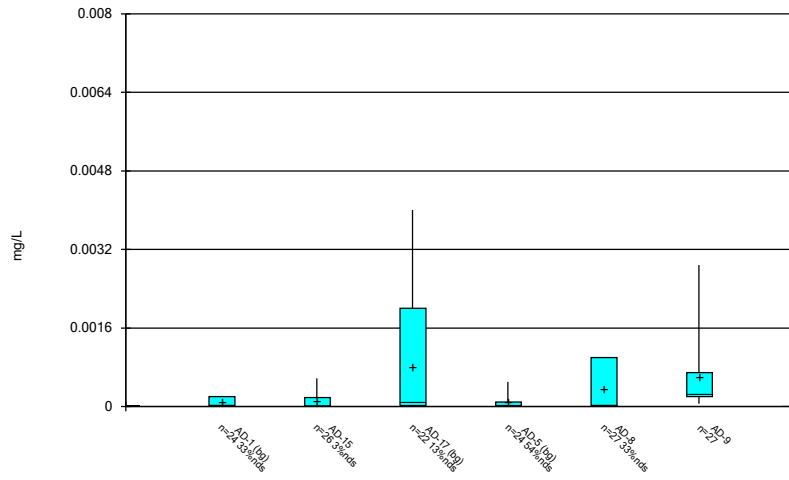
Box & Whiskers Plot



Constituent: Beryllium, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
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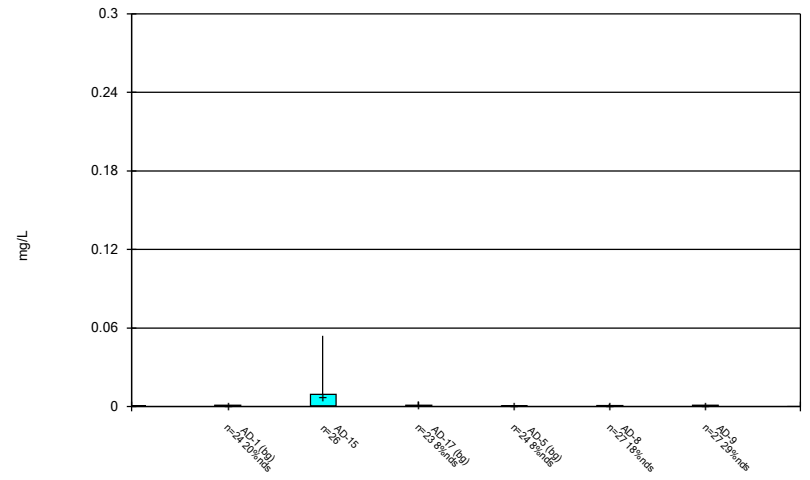


Box & Whiskers Plot



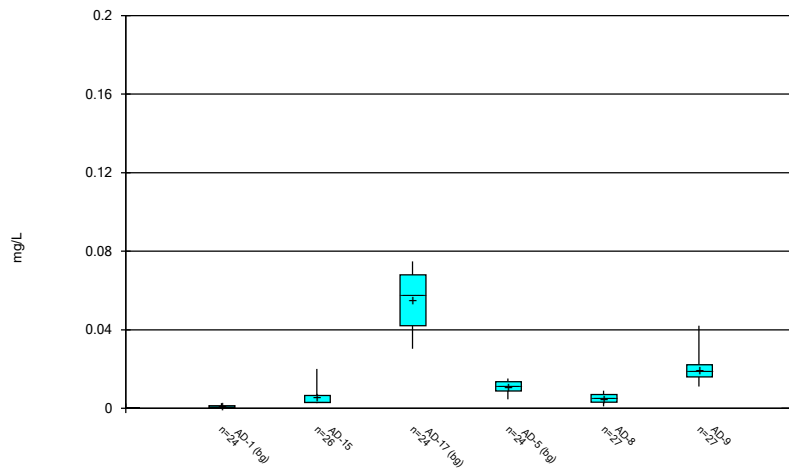
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Box & Whiskers Plot



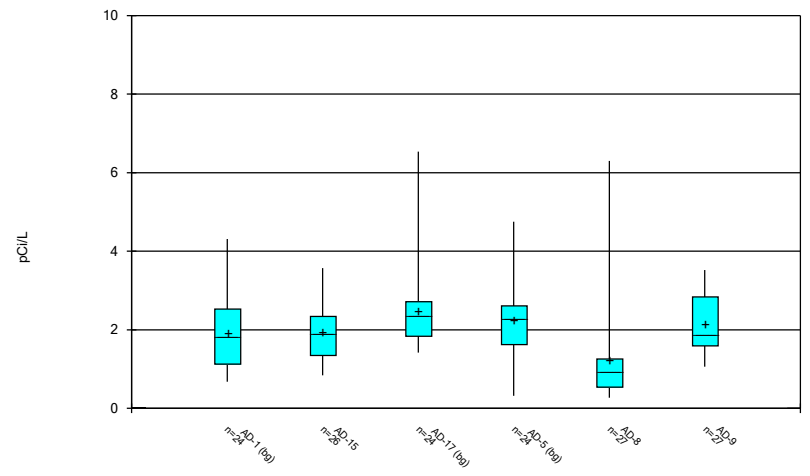
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Box & Whiskers Plot



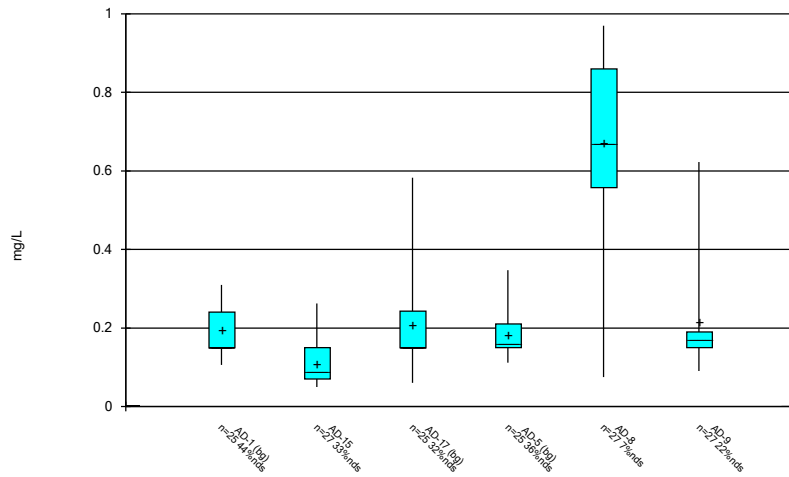
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Box & Whiskers Plot



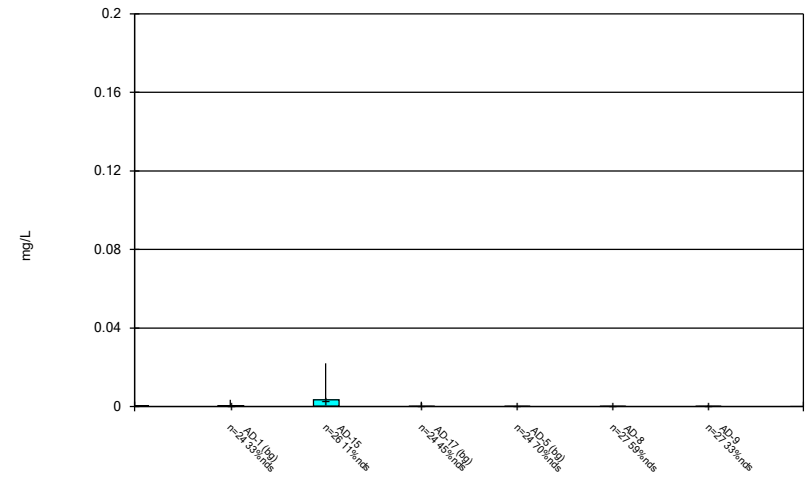
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 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



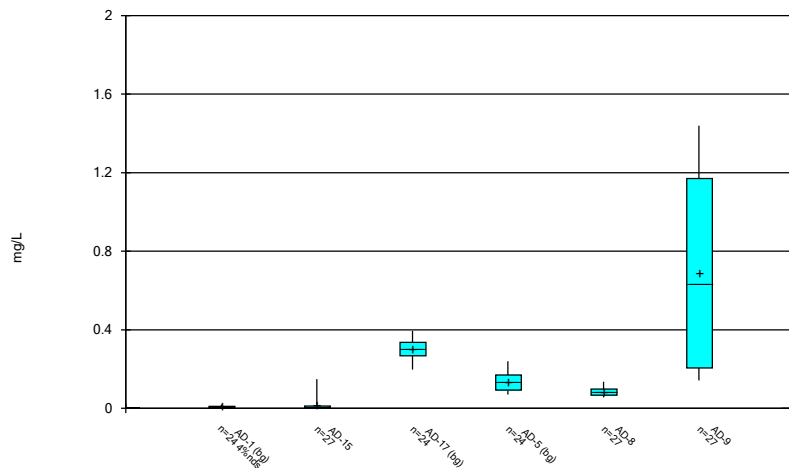
Constituent: Fluoride, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



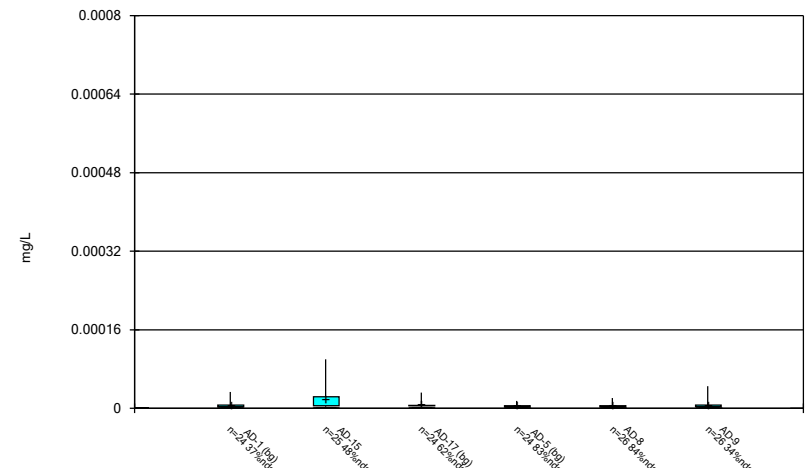
Constituent: Lead, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



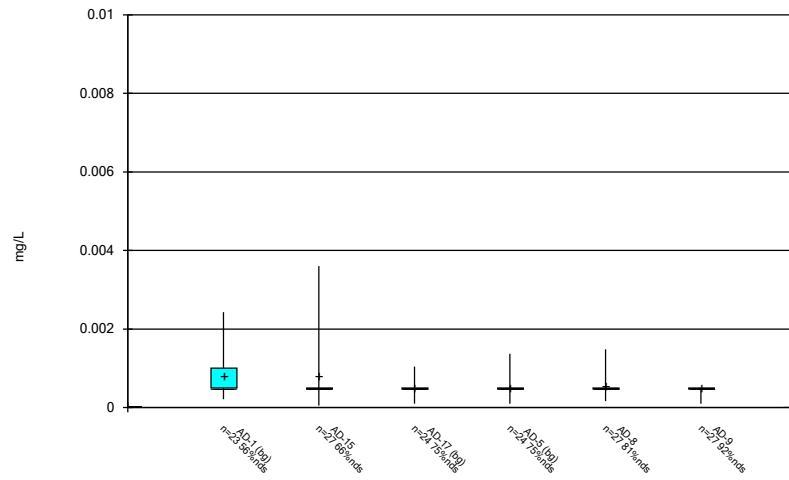
Constituent: Lithium, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
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Box & Whiskers Plot



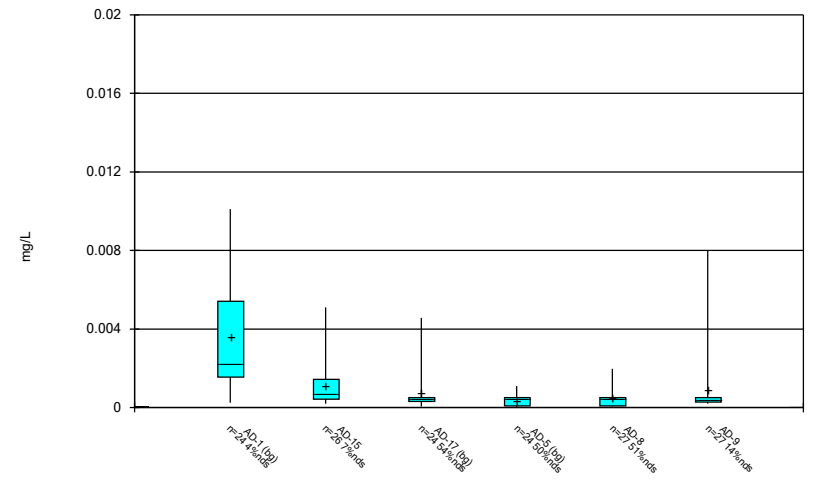
Constituent: Mercury, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



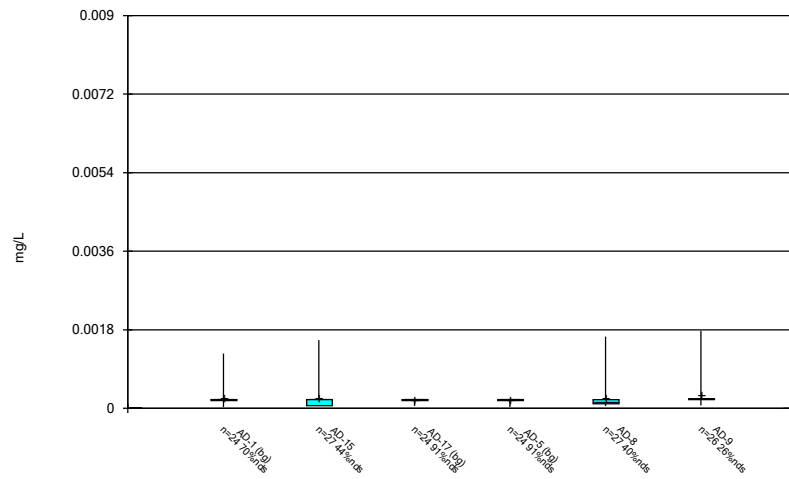
Constituent: Molybdenum, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 6/4/2024 10:24 AM View: Descriptive  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

# Outlier Summary

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 6/4/2024, 10:34 AM

Date	AD-15 Arsenic, total (mg/L)	AD-15 Barium, total (mg/L)	AD-15 Beryllium, total (mg/L)	AD-15 Cadmium, total (mg/L)	AD-17 Cadmium, total (mg/L)	AD-15 Chromium, total (mg/L)	AD-17 Chromium, total (mg/L)	AD-15 Cobalt, total (mg/L)	AD-15 Combined Radium 226 + 228 (pCi/L)	AD-15 Lead, total (mg/L)
9/29/2016										
9/30/2016	0.131 (o)	1.93 (o)	0.015 (o)	0.007 (o)		0.28 (o)		0.134 (o)		0.161 (o)
1/20/2017							0.068 (o)			
6/8/2017							0.00606 (o)			
5/23/2018										
5/24/2018										0.00646 (o)
6/2/2021										

Date	AD-15 Mercury, total (mg/L)	AD-1 Molybdenum, total (mg/L)	AD-15 Selenium, total (mg/L)	AD-9 Thallium, total (mg/L)
9/29/2016				
9/30/2016	0.000707 (o)		0.014 (o)	
1/20/2017				
6/8/2017				
5/23/2018			0.00846 (o)	
5/24/2018				
6/2/2021				0.0048 (o)

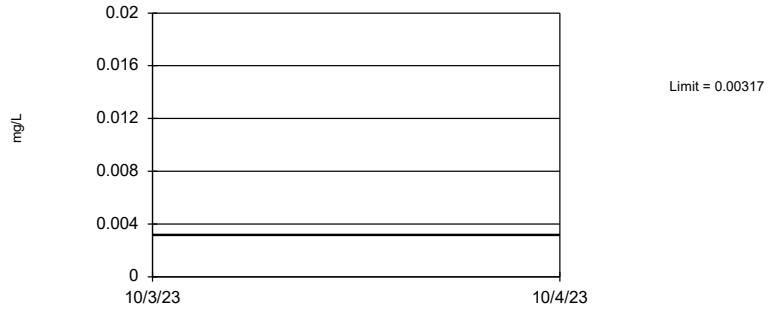


# Upper Tolerance Limits Summary Table

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 1/3/2024, 1:35 PM

Constituent	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
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)

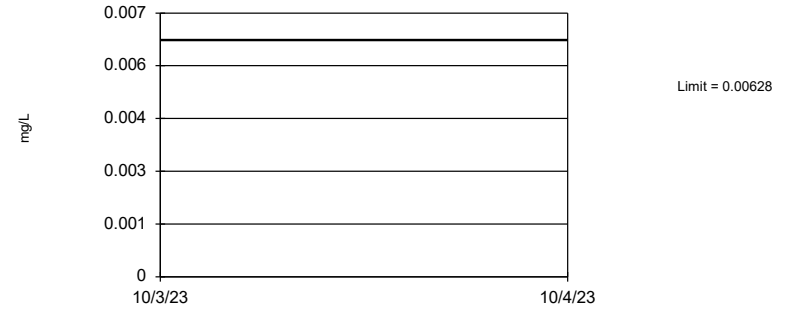
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

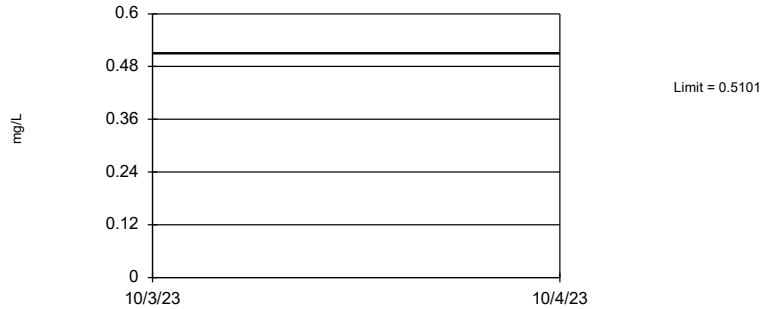
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

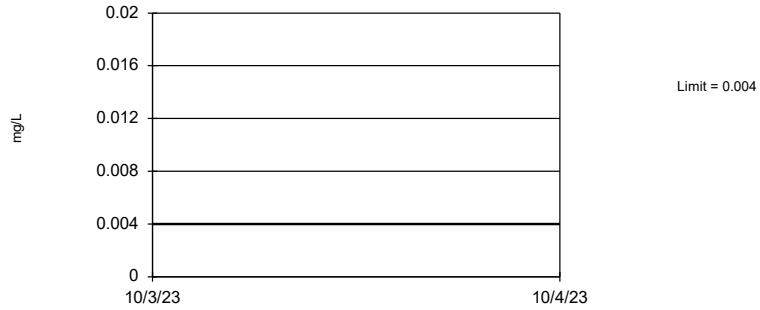
### Tolerance Limit Interwell Parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

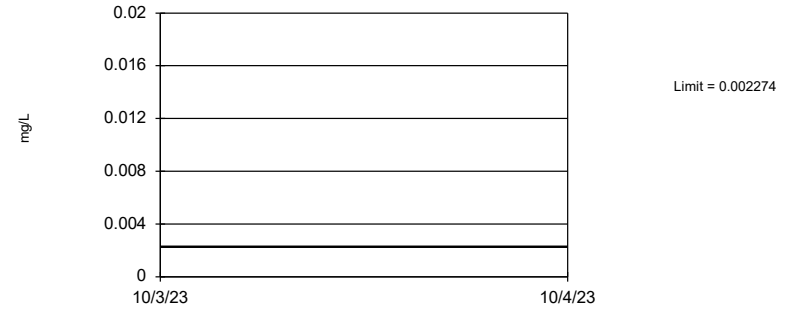
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

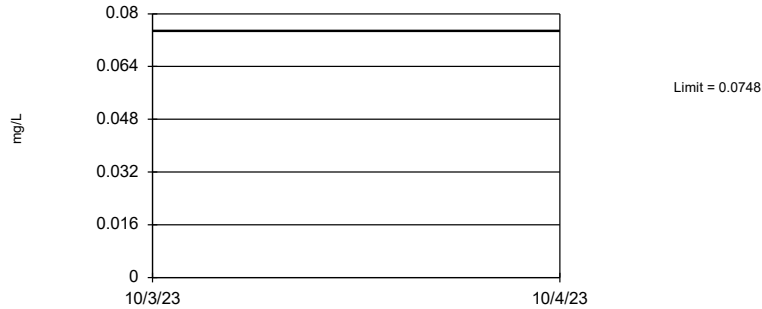
### Tolerance Limit Interwell Parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

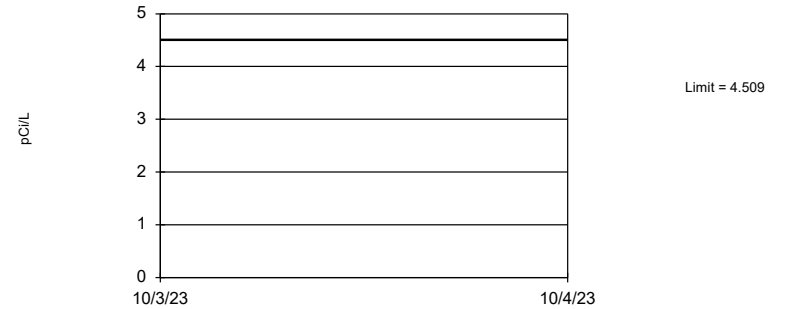
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

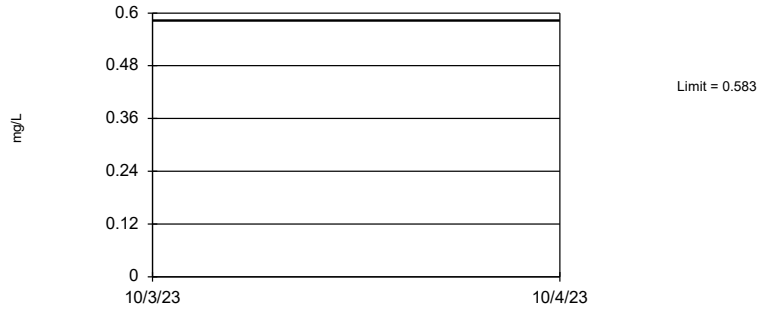
### Tolerance Limit Interwell Parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

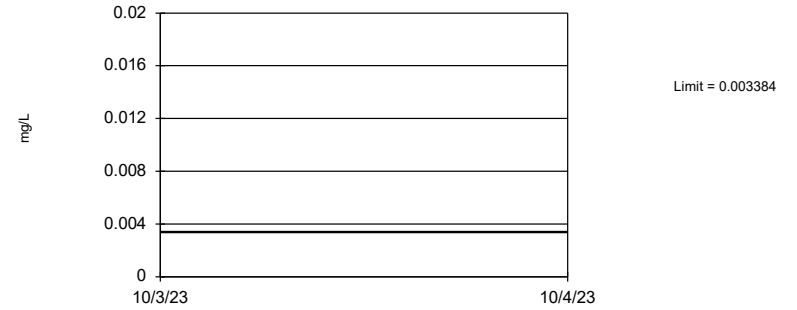
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

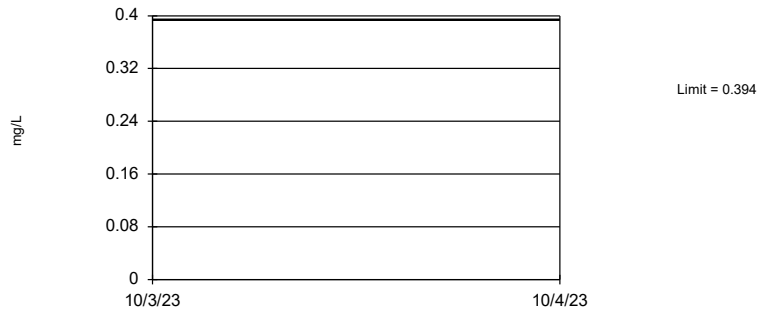
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

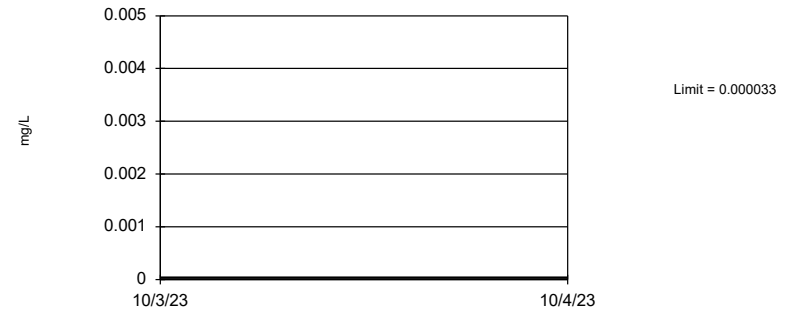
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

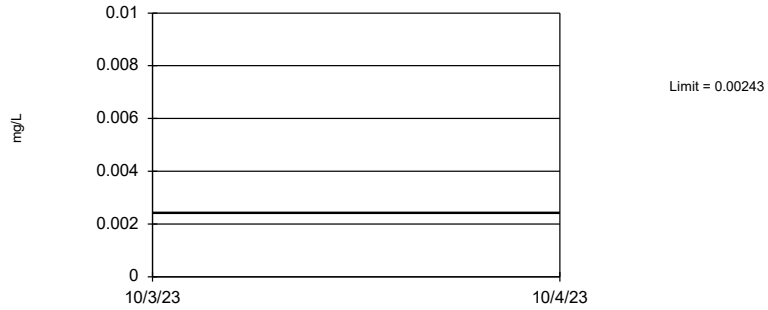
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

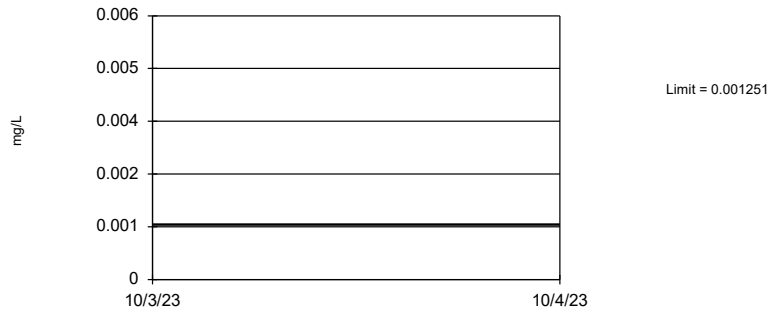
### Tolerance Limit Interwell Non-parametric



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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 1/3/2024 1:33 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



<b>WELSH PBAP GWPS</b>			
<b>Constituent Name</b>	<b>MCL</b>	<b>Background Limit</b>	<b>GWPS</b>
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*

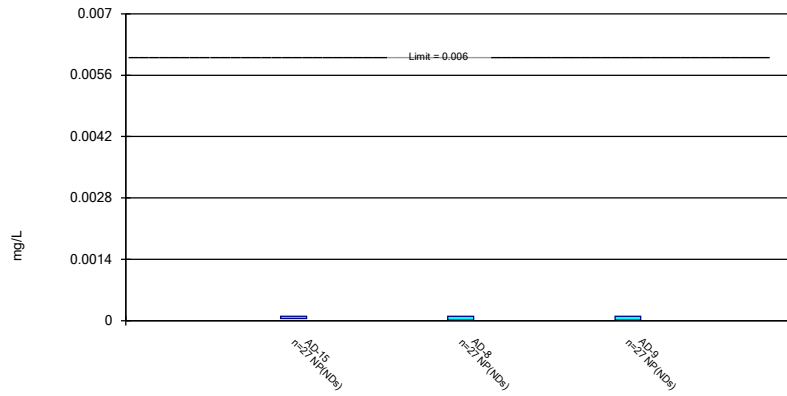
# Confidence Interval Summary Table - All Results (No Significant)

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 6/4/2024, 10:21 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig. N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony, total (mg/L)	AD-15	0.0001	0.00005	0.006	No 27	0.00007604	0.00003479	62.96	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	AD-8	0.0001	0.000012	0.006	No 27	0.0002482	0.000646	74.07	None	No	0.01	NP (NDs)
Antimony, total (mg/L)	AD-9	0.0001	0.00001	0.006	No 27	0.00008985	0.00002925	88.89	None	No	0.01	NP (NDs)
Arsenic, total (mg/L)	AD-15	0.006081	0.003066	0.01	No 26	0.005702	0.005322	0	None	ln(x)	0.01	Param.
Arsenic, total (mg/L)	AD-8	0.001063	0.00027	0.01	No 27	0.00173	0.002169	29.63	None	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-9	0.005	0.00027	0.01	No 27	0.002109	0.002126	33.33	None	No	0.01	NP (normality)
Barium, total (mg/L)	AD-15	0.153	0.0753	2	No 26	0.1272	0.08739	0	None	No	0.01	NP (normality)
Barium, total (mg/L)	AD-8	0.02931	0.02353	2	No 27	0.02667	0.006473	0	None	sqrt(x)	0.01	Param.
Barium, total (mg/L)	AD-9	0.05021	0.03657	2	No 27	0.04516	0.01521	0	None	ln(x)	0.01	Param.
Beryllium, total (mg/L)	AD-15	0.0004368	0.0001595	0.004	No 26	0.0004567	0.0005586	0	None	ln(x)	0.01	Param.
Beryllium, total (mg/L)	AD-8	0.00005	0.00003	0.004	No 27	0.00004833	0.00003226	66.67	None	No	0.01	NP (NDs)
Beryllium, total (mg/L)	AD-9	0.001116	0.0006798	0.004	No 27	0.0008977	0.0004567	0	None	No	0.01	Param.
Cadmium, total (mg/L)	AD-15	0.0001114	0.000011	0.005	No 26	0.0001165	0.0001766	3.846	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	AD-8	0.001	0.000021	0.005	No 27	0.0003516	0.0004673	33.33	None	No	0.01	NP (normality)
Cadmium, total (mg/L)	AD-9	0.0005788	0.0002142	0.005	No 27	0.0006176	0.0007569	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	AD-15	0.003682	0.000604	0.1	No 26	0.00722	0.01395	0	None	ln(x)	0.01	Param.
Chromium, total (mg/L)	AD-8	0.0004156	0.0001663	0.1	No 27	0.0004831	0.0004434	18.52	Kaplan-Meier	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	AD-9	0.000589	0.000391	0.1	No 27	0.0006571	0.0002967	29.63	Kaplan-Meier	No	0.01	Param.
Cobalt, total (mg/L)	AD-15	0.006	0.00294	0.075	No 26	0.005704	0.004653	0	None	No	0.01	NP (normality)
Cobalt, total (mg/L)	AD-8	0.005804	0.003559	0.075	No 27	0.004682	0.002353	0	None	No	0.01	Param.
Cobalt, total (mg/L)	AD-9	0.02231	0.01697	0.075	No 27	0.01993	0.006043	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-15	2.307	1.579	5	No 26	1.943	0.7468	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-8	1.287	0.6285	5	No 27	1.232	1.282	0	None	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-9	2.48	1.814	5	No 27	2.147	0.6983	0	None	No	0.01	Param.
Fluoride, total (mg/L)	AD-15	0.08665	0.05616	4	No 27	0.1088	0.04807	33.33	Kaplan-Meier	sqrt(x)	0.01	Param.
Fluoride, total (mg/L)	AD-8	0.7875	0.6139	4	No 27	0.6706	0.2252	7.407	None	x^2	0.01	Param.
Fluoride, total (mg/L)	AD-9	0.19	0.15	4	No 27	0.2153	0.1366	22.22	None	No	0.01	NP (normality)
Lead, total (mg/L)	AD-15	0.00298	0.00009	0.0034	No 26	0.003057	0.005715	11.54	None	No	0.01	NP (normality)
Lead, total (mg/L)	AD-8	0.0002	0.00008	0.0034	No 27	0.0001534	0.00006535	59.26	None	No	0.01	NP (NDs)
Lead, total (mg/L)	AD-9	0.0002	0.00008	0.0034	No 27	0.0001723	0.00009512	33.33	None	No	0.01	NP (normality)
Lithium, total (mg/L)	AD-15	0.0108	0.00338	0.39	No 27	0.01323	0.02832	0	None	No	0.01	NP (normality)
Lithium, total (mg/L)	AD-8	0.09621	0.07546	0.39	No 27	0.08583	0.02174	0	None	No	0.01	Param.
Lithium, total (mg/L)	AD-9	1.17	0.205	0.39	No 27	0.6909	0.4843	0	None	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-15	0.000022	0.000005	0.002	No 25	0.00001947	0.00002607	48	None	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-8	0.000008	0.000005	0.002	No 26	0.000006065	0.000003317	84.62	None	No	0.01	NP (NDs)
Mercury, total (mg/L)	AD-9	0.000006	0.000003	0.002	No 26	0.000007353	0.000008956	34.62	None	No	0.01	NP (normality)
Molybdenum, total (mg/L)	AD-15	0.0005868	0.0004635	0.0024	No 27	0.00081	0.0008534	66.67	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-8	0.0008389	0.0002	0.0024	No 27	0.0005443	0.00024	81.48	None	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-9	0.0005	0.00011	0.0024	No 27	0.0004707	0.0001054	92.59	None	No	0.01	NP (NDs)
Selenium, total (mg/L)	AD-15	0.001307	0.0005497	0.05	No 26	0.001114	0.001123	7.692	None	x^(1/3)	0.01	Param.
Selenium, total (mg/L)	AD-8	0.0005	0.00008	0.05	No 27	0.0004738	0.0004917	51.85	None	No	0.01	NP (NDs)
Selenium, total (mg/L)	AD-9	0.00051	0.00027	0.05	No 27	0.0009119	0.001629	14.81	None	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-15	0.0002	0.00007	0.002	No 27	0.0002307	0.0003626	44.44	None	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-8	0.0002	0.0001	0.002	No 27	0.0002406	0.0003477	40.74	None	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-9	0.00022	0.0002	0.002	No 26	0.0003039	0.0003907	26.92	None	No	0.01	NP (normality)

### Non-Parametric Confidence Interval

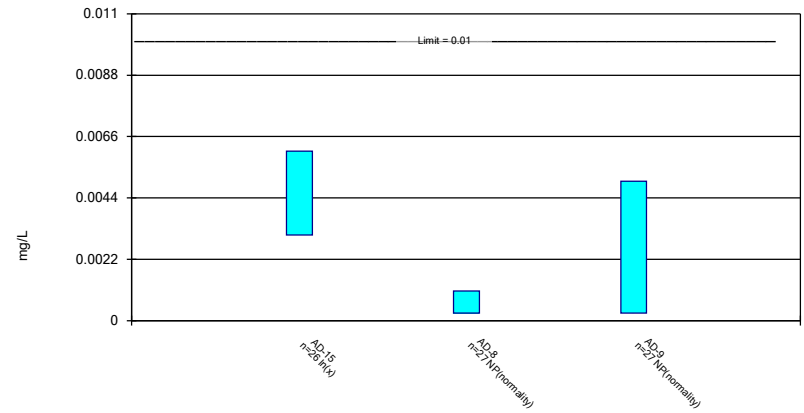
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Antimony, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

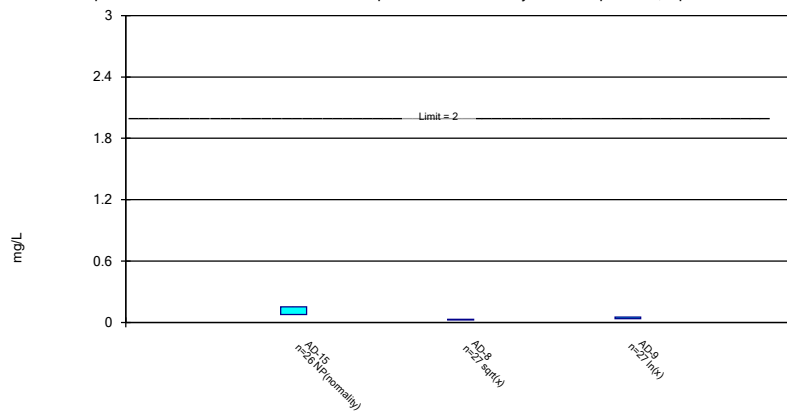
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

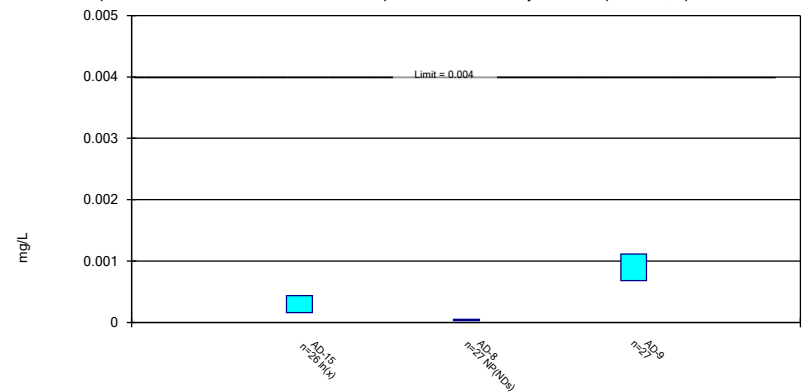
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

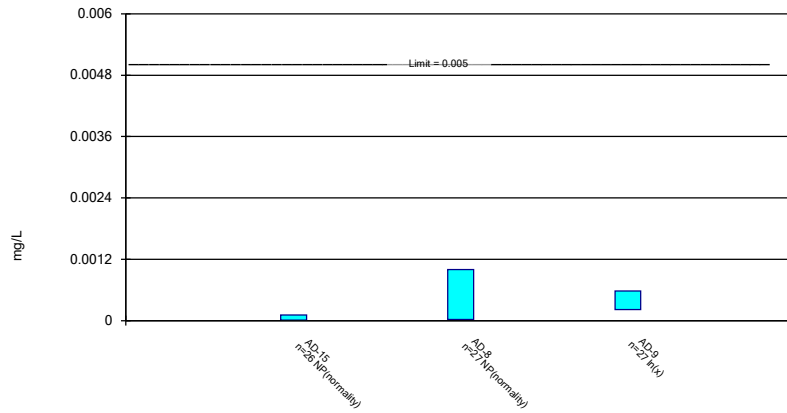
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Beryllium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

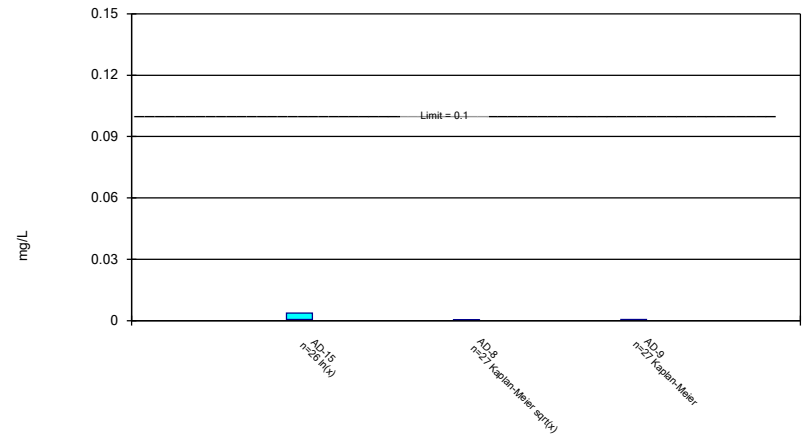
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric Confidence Interval

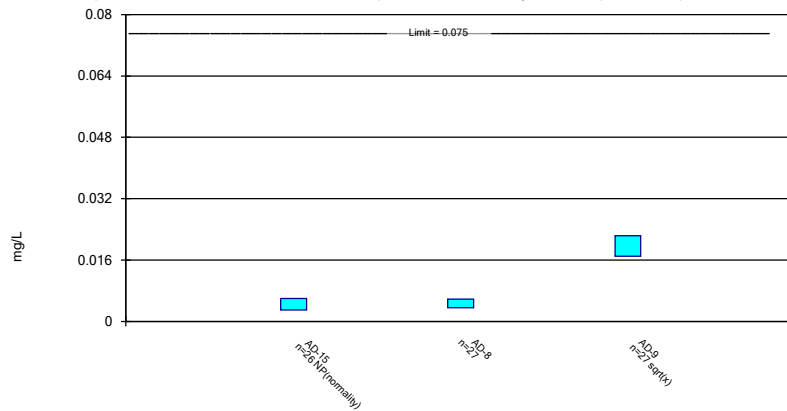
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

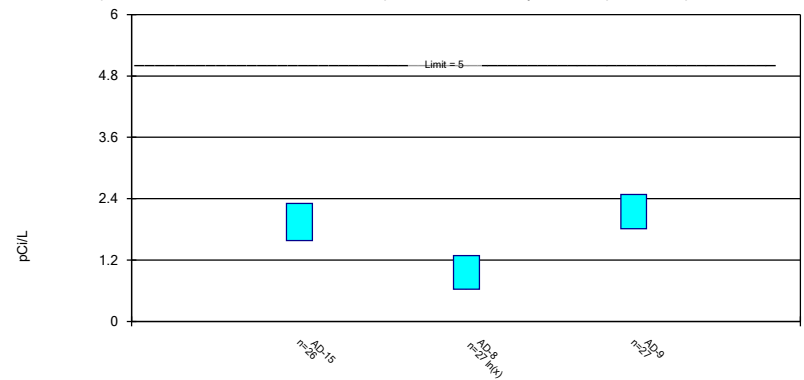
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric Confidence Interval

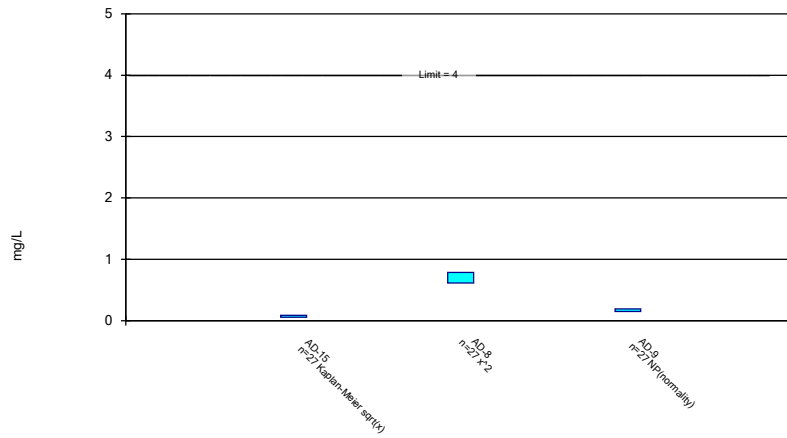
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

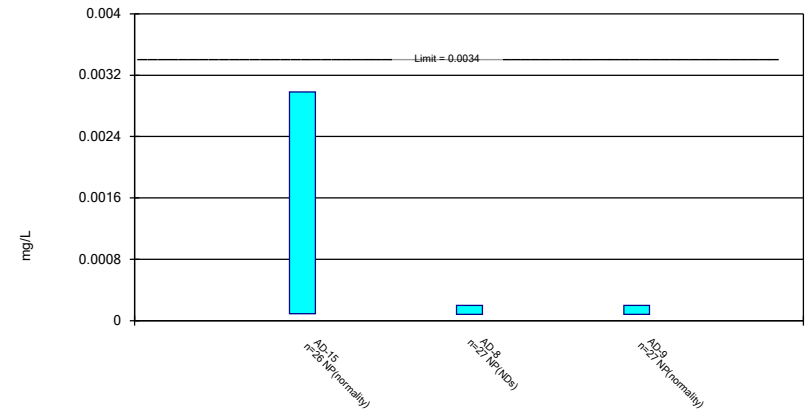
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Non-Parametric Confidence Interval

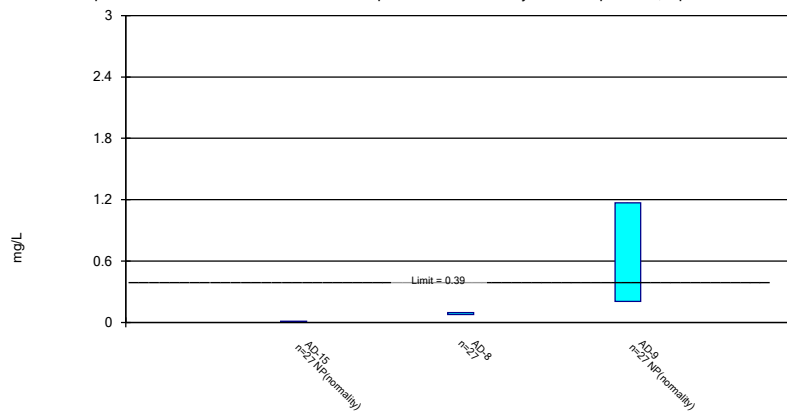
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Lead, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

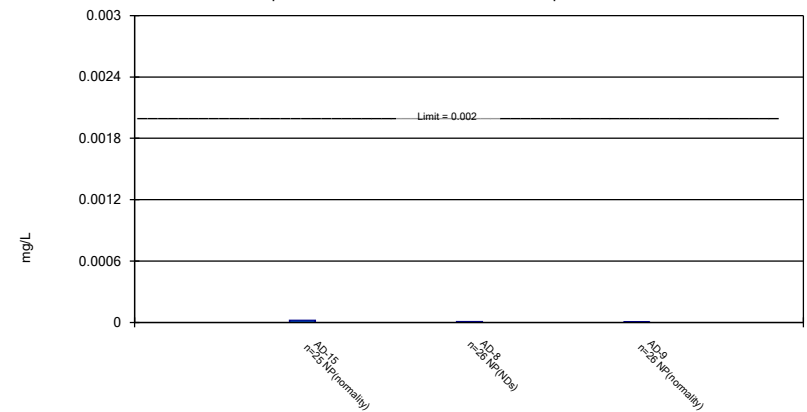
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Non-Parametric Confidence Interval

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

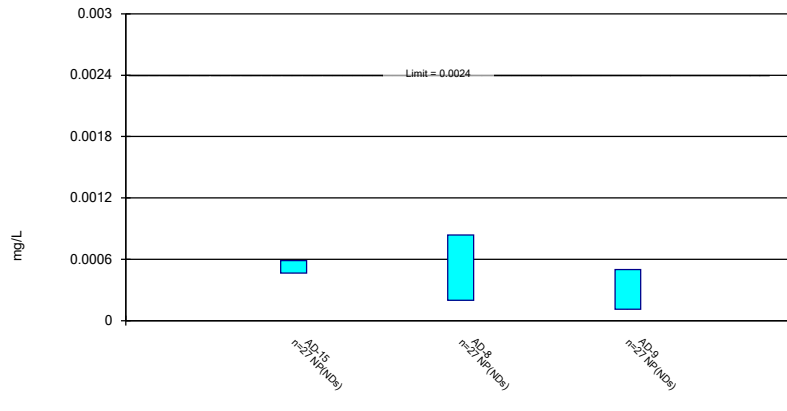


Constituent: Mercury, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP



### Non-Parametric Confidence Interval

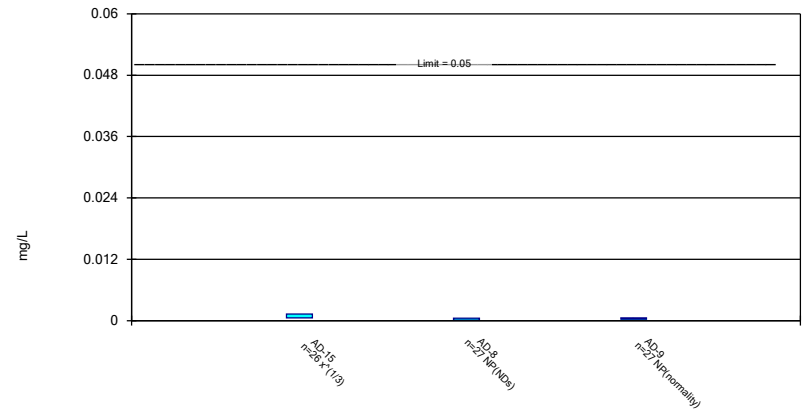
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Molybdenum, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

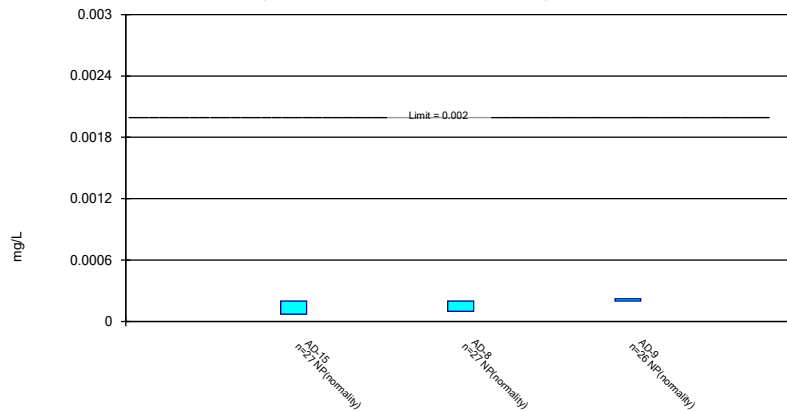
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Non-Parametric Confidence Interval

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



Constituent: Thallium, total Analysis Run 6/4/2024 10:18 AM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

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# STATISTICAL ANALYSIS SUMMARY, 2024 2<sup>ND</sup> SEMIANNUAL EVENT PRIMARY BOTTOM ASH POND

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## LIST OF ATTACHMENTS

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Attachment B:	Data Quality Review Memorandum
Attachment C:	Statistical Analysis Output

## ACRONYMS AND ABBREVIATIONS

CCR	coal combustion residuals
GWPS	groundwater protection standard
LPL	lower prediction limit
mg/L	milligram per liter
PBAP	Primary Bottom Ash Pond
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's (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 Primary Bottom Ash Pond (PBAP), 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 at the PBAP. An alternative source was not identified at the time, 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. PRIMARY BOTTOM ASH POND 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 during 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 PBAP 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 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 PBAP.

### 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, fluoride, sulfate, and total dissolved solids (TDS). Interwell tests were used to evaluate potential SSIs for boron 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 PBAP. Because the interwell Appendix III limits and the Appendix IV GWPSs are based on data from background 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, fluoride, 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 C. 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 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 and pH, and lower prediction limits (LPLs) were also updated for pH using historical data through September 2024. The updated prediction limits are summarized in Table 3. Intrawell UPLs were updated for calcium, chloride, fluoride, sulfate, and TDS using the historical data through April 2024. 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 under the LPL nor above 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 was 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 above background limits. The results from this event and the prediction limits are summarized in Table 3. The following were detected above the UPLs:

- Boron concentrations were detected above the interwell UPL of 0.973 milligrams per liter (mg/L) at AD-8 (0.996 mg/L).
- pH values were below the intrawell UPL of 4.8 standard units (SU) at AD-15 (3.8 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 the 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 below the LPL for pH.

### 3. REFERENCES

Geosyntec. 2018. Statistical Analysis Summary – Primary Bottom Ash Pond, 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 – Primary Bottom Ash Pond**

Parameter	Unit	AD-1	AD-5	AD-8	AD-9		AD-15	AD-17
		Background	Background	Compliance	Compliance		Compliance	Background
		9/10/2024	9/10/2024	9/9/2024	9/8/2024	9/9/2024	9/9/2024	9/10/2024
Antimony	µg/L	0.029 J1	0.1 U1	0.1 U1	--	0.010 J1	0.013 J1	0.1 U1
Arsenic	µg/L	0.19	1.26	0.24	--	0.31	3.18	0.35
Barium	µg/L	83.9	62.3	30.0	--	50.7	75.1	14.0
Beryllium	µg/L	2.2 J1	2.5 U1	0.008 J1	--	1.76	0.180	0.035 J1
Boron	mg/L	0.973	0.039 J1	0.996	--	0.400	0.171	0.106
Cadmium	µg/L	0.039	0.010 J1	0.017 J1	--	0.435	0.013 J1	0.014 J1
Calcium	mg/L	7.75	33.2	22.4	--	14.4	2.66	172
Chloride	mg/L	3.98	22.5	19.4	--	14.6	27.8	38.4
Chromium	µg/L	0.44	0.31	0.29 J1	--	0.71	0.35	0.31
Cobalt	µg/L	4.72	10.1	5.74	--	24.9	3.32	42.6
Combined Radium	pCi/L	4.7	2.1	1.27	--	0.81	0.97	5.99
Fluoride	mg/L	0.43	0.16	0.87	--	0.18	0.06	0.15 U1
Lead	µg/L	0.21	0.07 J1	0.2 U1	--	0.08 J1	0.18 J1	0.06 J1
Lithium	mg/L	0.011 J1	0.152	0.0713	--	0.201	0.00403	0.254
Mercury	µg/L	0.002 J1	0.005 U1	0.005 U1	--	0.002 J1	0.005 U1	0.003 J1
Molybdenum	µg/L	0.5 U1	0.5 U1	0.5 U1	--	0.5 U1	0.5 U1	0.5 U1
Selenium	µg/L	11.3	0.06 J1	0.06 J1	--	0.61	0.58	0.5 U1
Sulfate	mg/L	126	114	150	--	157	9.1	1,110
Thallium	µg/L	0.06 J1	0.2 U1	0.13 J1	--	0.25	0.06 J1	0.2 U1
Total Dissolved Solids	mg/L	260	310	300	--	380	130	1,580 S7
pH	SU	5.7	6.3	6.7	5.6	--	3.8	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 – Primary Bottom Ash Pond**

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 Plant – Primary Bottom Ash Pond**

Analyte	Unit	Description	AD-8	AD-9*	AD-15
			9/9/2024	9/9/2024	4/2/2024
Boron	mg/L	Interwell Background Value (UPL)	0.973		
		Analytical Result	<b>0.996</b>	0.400	0.171
Calcium	mg/L	Intrawell Background Value (UPL)	27.3	258	4.42
		Analytical Result	22.4	14.4	2.66
Chloride	mg/L	Intrawell Background Value (UPL)	25.9	103	35.5
		Analytical Result	19.4	14.6	27.8
Fluoride	mg/L	Intrawell Background Value (UPL)	0.981	0.434	0.150
		Analytical Result	0.87	0.18	0.06
pH	SU	Interwell Background Value (UPL)	6.9		
		Interwell Background Value (LPL)	4.8		
		Analytical Result	6.7	5.6	<b>3.8</b>
Sulfate	mg/L	Intrawell Background Value (UPL)	198	1910	28.2
		Analytical Result	150	157	9.1
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	467	2690	243
		Analytical Result	300	380	130

Notes:

**1. Bold values exceed the background value.**

2. Background values are shaded gray.

\*: pH measured on 9/8/2024. 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 Primary Bottom Ash Pond 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

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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. 32<sup>1</sup> prior to submittal of this data to TCEQ.

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<sup>1</sup> 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.

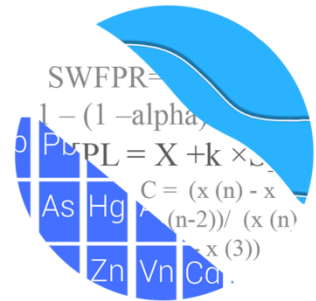
# ATTACHMENT C

## Statistical Analysis Output

## GROUNDWATER STATS CONSULTING

November 27, 2024

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



Re: Welsh PBAP - 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 PBAP. 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. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** AD-1, AD-5, and AD-17
- **Downgradient wells:** AD-8, AD-9, and AD-15

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. Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC.

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 in the Outlier Summary following this letter (Figure C) and 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 - Appendix III Constituents**

- 1) Intrawell prediction limits, combined with a 1-of-2 resample plan for calcium, chloride, fluoride, sulfate, and TDS
- 2) Interwell prediction limits combined with a 1-of-2 resample plan for boron 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. 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 (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% 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 for parametric limits. 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, 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 capable of detecting potential changes in groundwater quality downgradient of the facility; 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, fluoride, sulfate, and TDS while interwell prediction limits were appropriate for boron 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 for boron 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 or pH among upgradient wells; therefore, no measurements were flagged as outliers. A previously flagged outlier for boron in downgradient well AD-9 was unflagged since it has no bearing on the interwell prediction limits constructed from upgradient wells.

For parameters which use intrawell prediction limits (calcium, chloride, fluoride, sulfate, and TDS), data 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 such as the spurious observations at well AD-15 during the September 2016 event for several constituents. Although reported as estimated values lower than an elevated historic reporting limit, the two highest values for fluoride in downgradient well AD-9 were flagged during this analysis. While Tukey's test did not identify the highest measurement of fluoride in downgradient well AD-15 as an outlier, this measurement was similarly flagged as it occurred early in the record and does not appear to represent current conditions. 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, fluoride, 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). Any records that were truncated during previous updates due to concentrations that were not representative of current groundwater quality conditions used curtailed portions of the respective record for comparison with the Mann-Whitney test. Discussions of any truncated records were included in previous background update reports. 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)
- Fluoride: AD-15

Although statistically significant differences were identified for these three well/constituent pairs, records were updated through April 2024. Two of the significant cases are for upgradient wells, and the newer data are needed to best characterize current upgradient groundwater quality. The statistically significant decrease in fluoride concentration at well AD-15 is largely the result of a more recent concentrations below the reporting limit of 0.15 mg/L. 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, fluoride, 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 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)

Decreasing

- pH: AD-17 (upgradient)

Statistically significant trends were identified for boron in upgradient well AD-1 and pH in upgradient well AD-17. 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 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 and pH (Figure G). Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent. Time series plots were included with the interwell prediction limit graphs to display concentrations at upgradient wells that were used to construct the statistical limits. A summary table of the updated limits may be found following this letter in the Prediction Limit Summary Tables. No comparisons of the September 2024 observations were 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. As mentioned above, 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.

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 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, an 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, such as the spurious observations at AD-15 during the September 2016 event for several constituents. As previously mentioned, two high values for fluoride in downgradient well AD-9 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 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 PBAP. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,



Easton Rayner  
Groundwater Analyst



Andrew Collins  
Project Manager

# Date Ranges

Date: 10/31/2024 1:35 PM

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

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Chloride, total (mg/L)

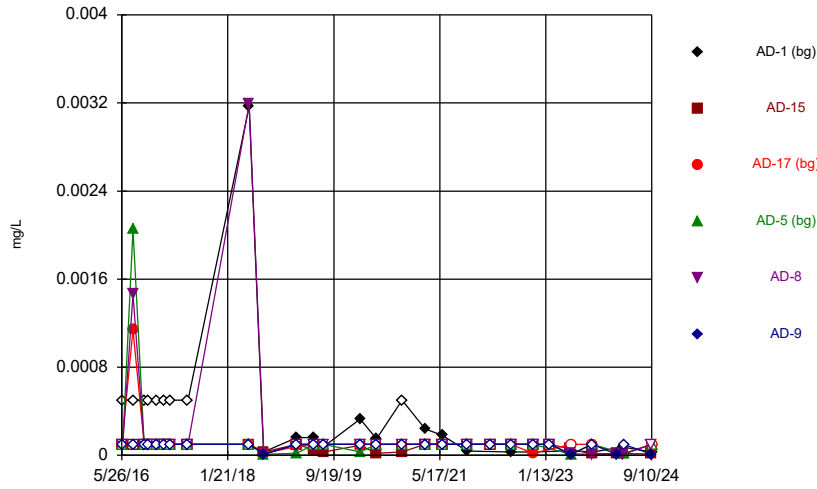
AD-8 background: 1/20/2017-4/1/2024

Fluoride, total (mg/L)

AD-17 background: 1/20/2017-4/1/2024

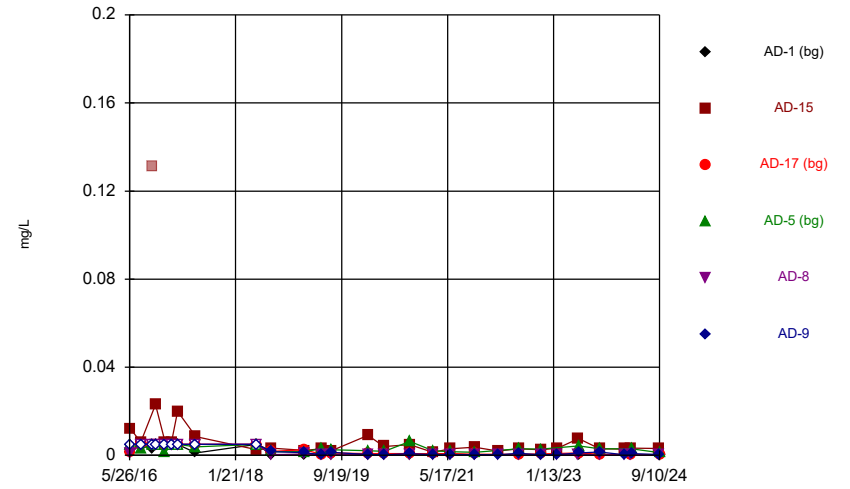
FIGURE A  
Time Series

### Time Series



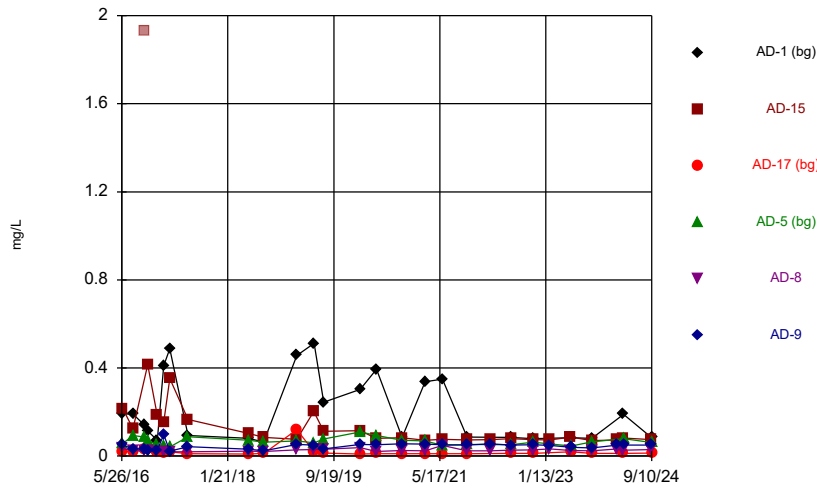
Constituent: Antimony, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



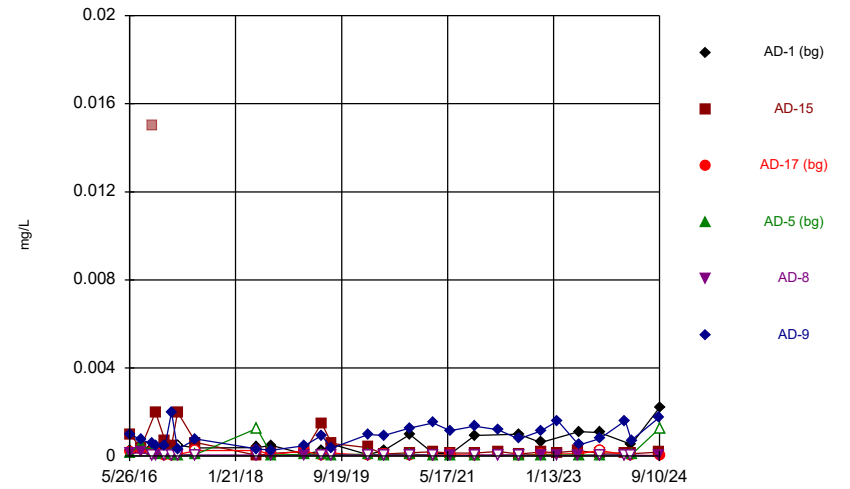
Constituent: Arsenic, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



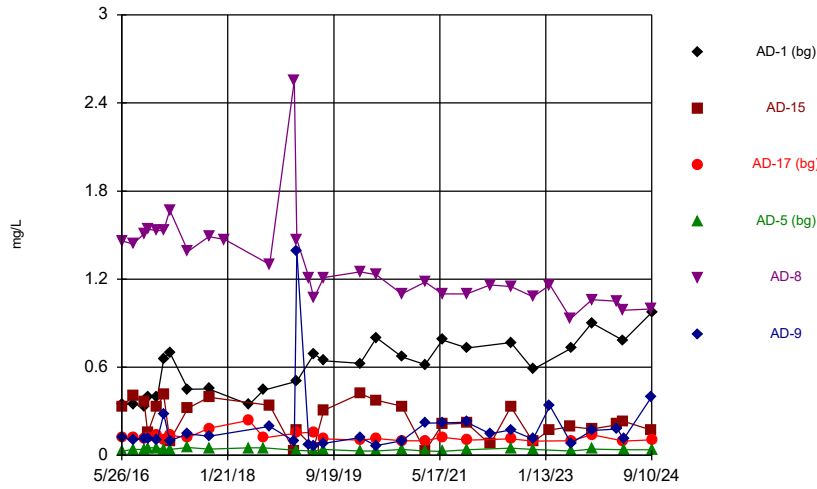
Constituent: Barium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



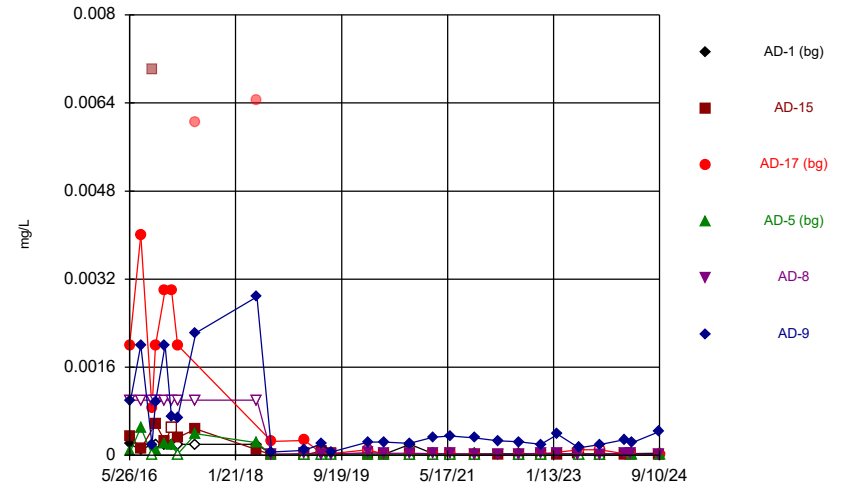
Constituent: Beryllium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



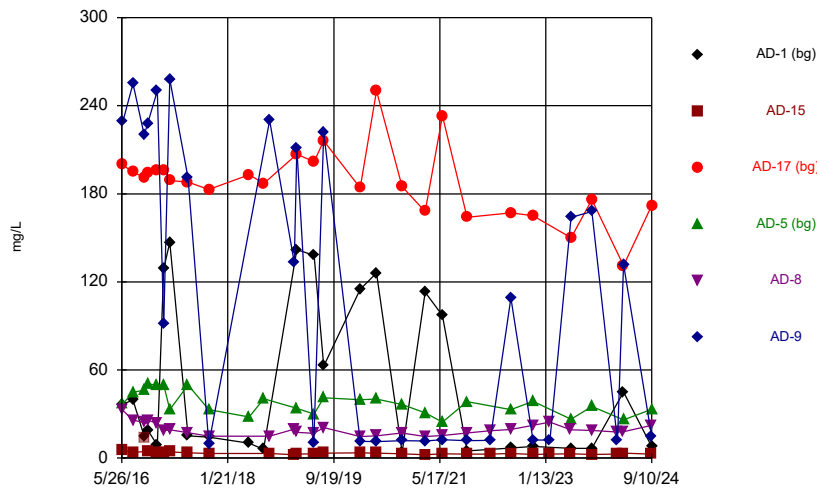
Constituent: Boron, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



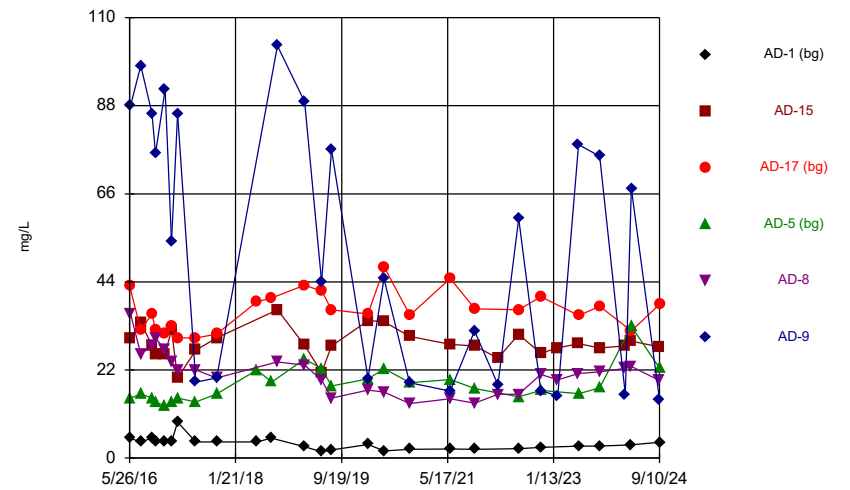
Constituent: Cadmium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



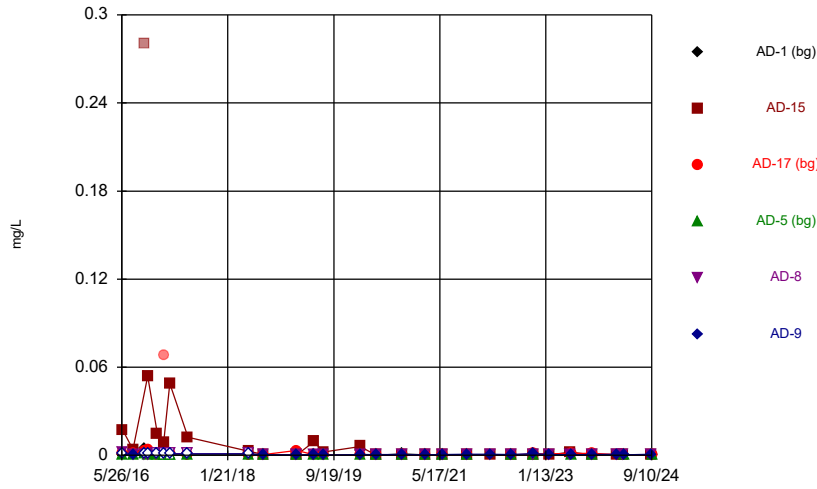
Constituent: Calcium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



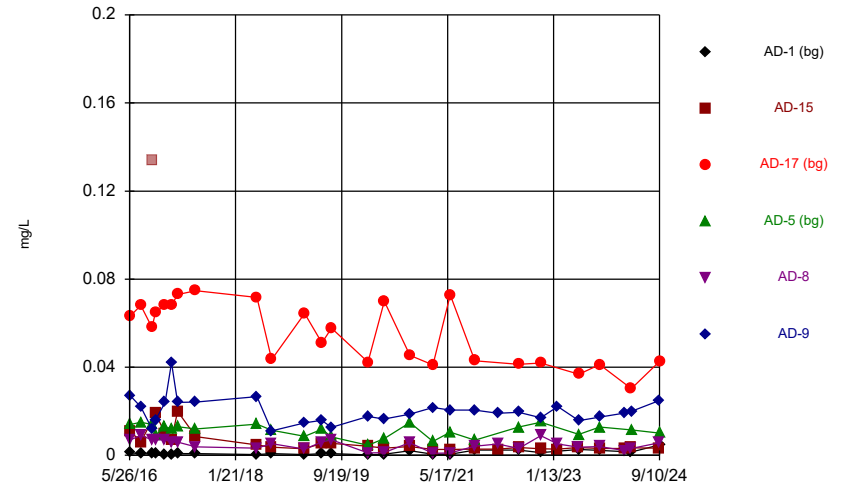
Constituent: Chloride, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



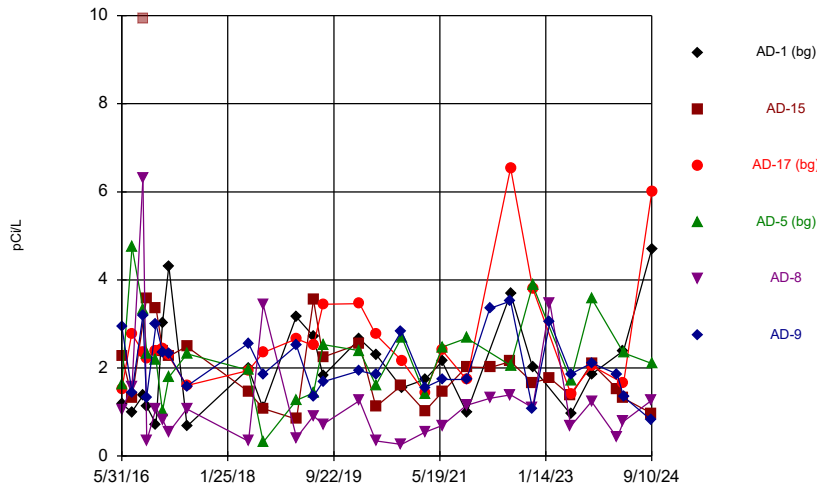
Constituent: Chromium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



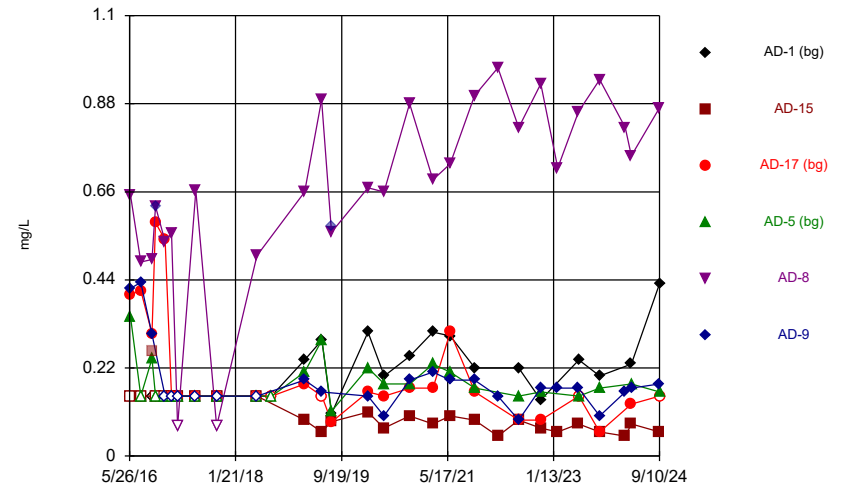
Constituent: Cobalt, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

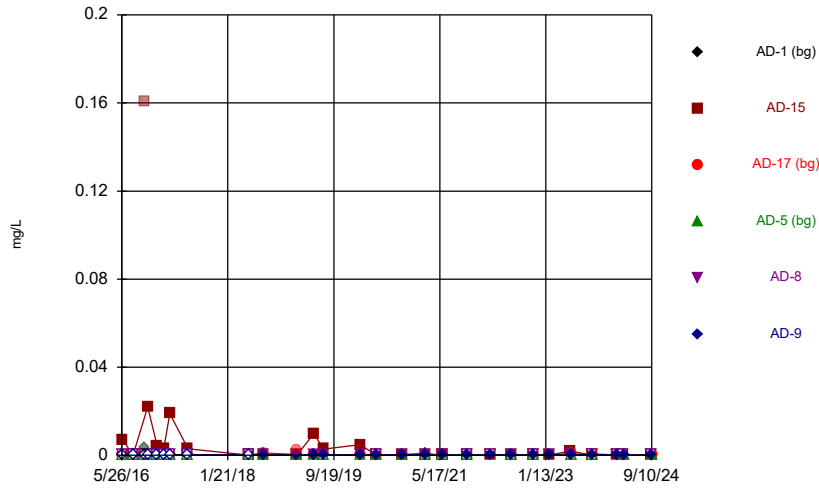
### Time Series



Constituent: Fluoride, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

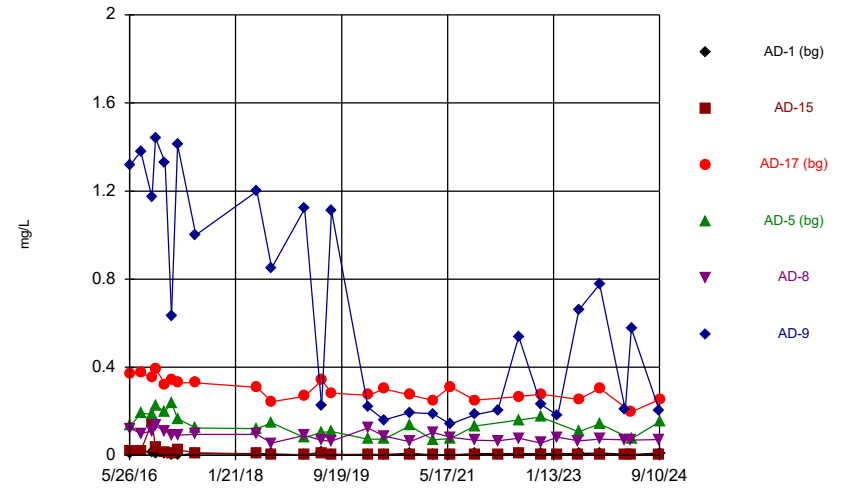


### Time Series



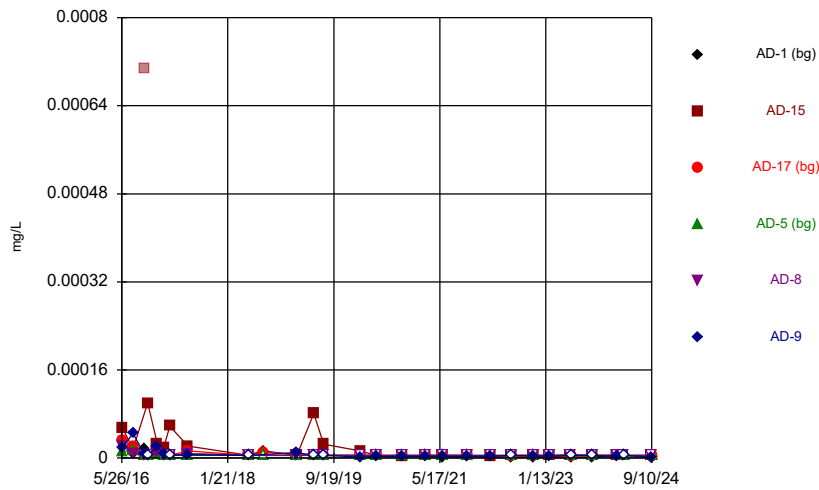
Constituent: Lead, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



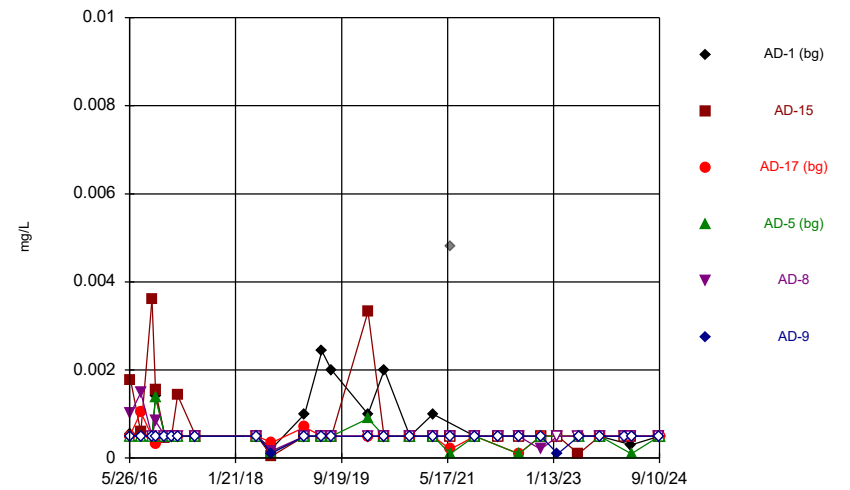
Constituent: Lithium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



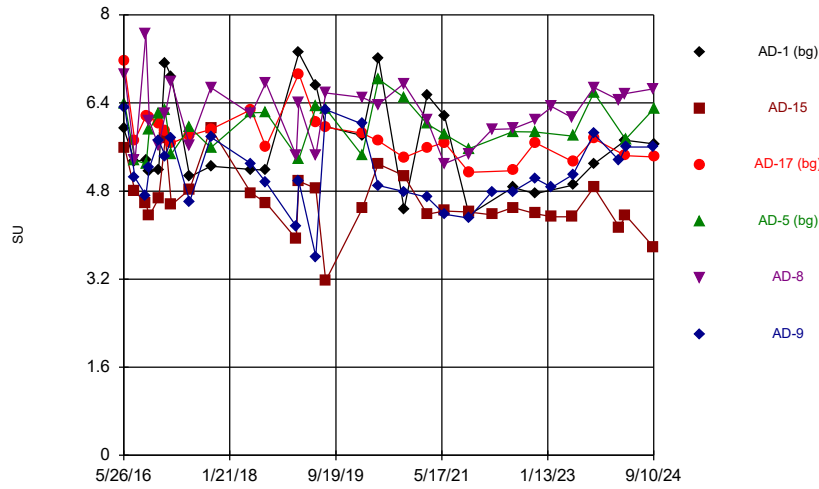
Constituent: Mercury, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



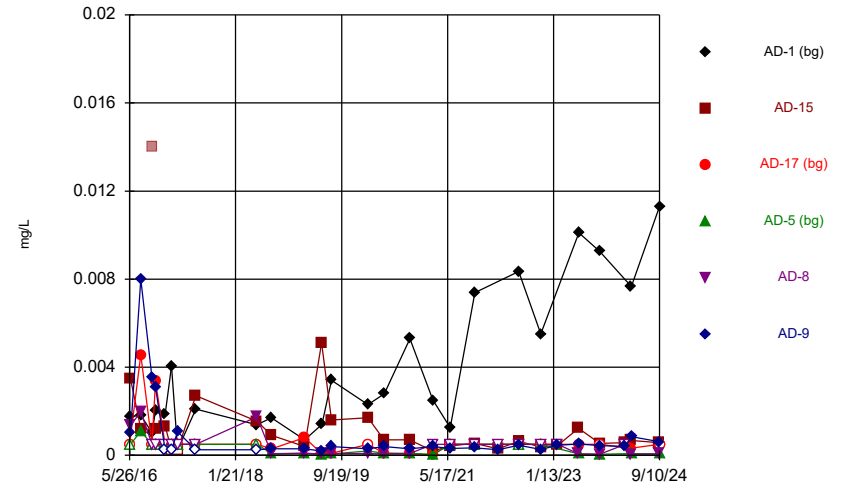
Constituent: Molybdenum, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



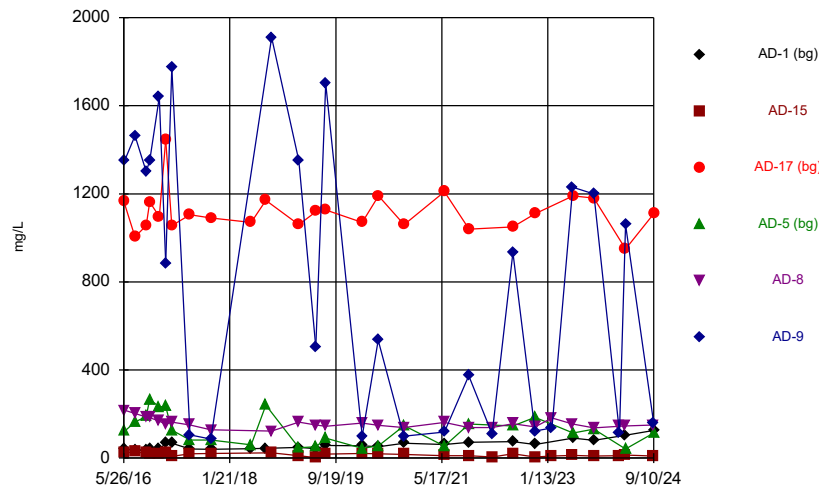
Constituent: pH, field Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



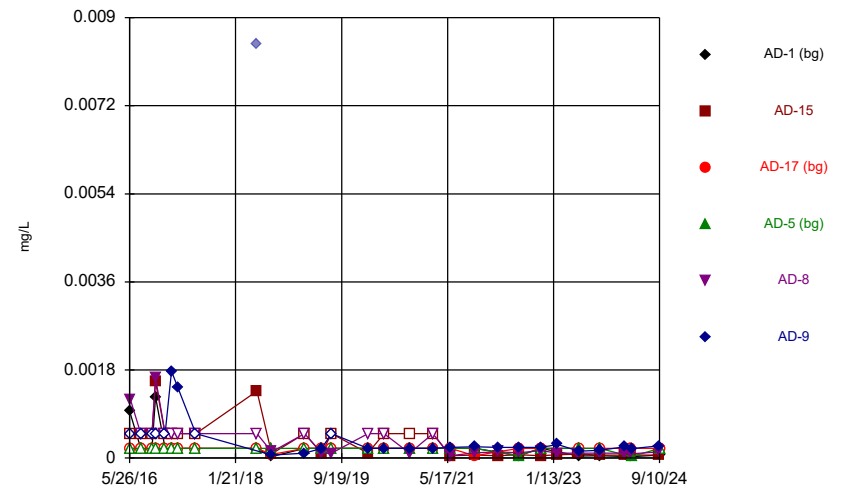
Constituent: Selenium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



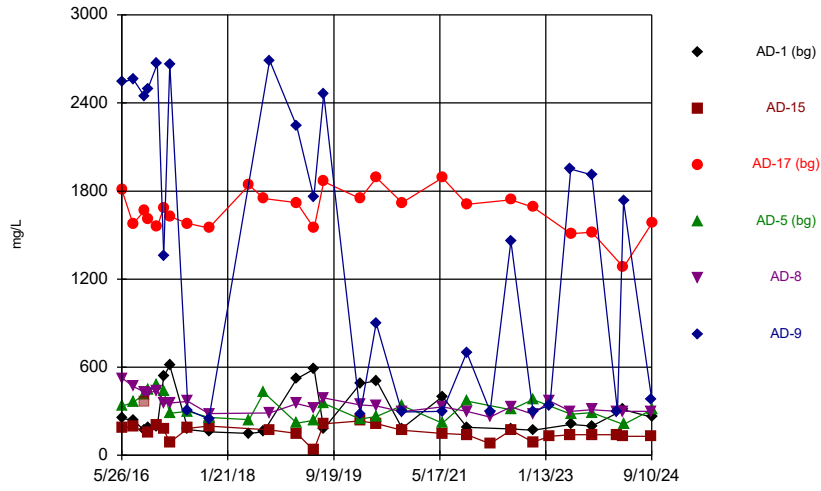
Constituent: Sulfate, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



Constituent: Thallium, total Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

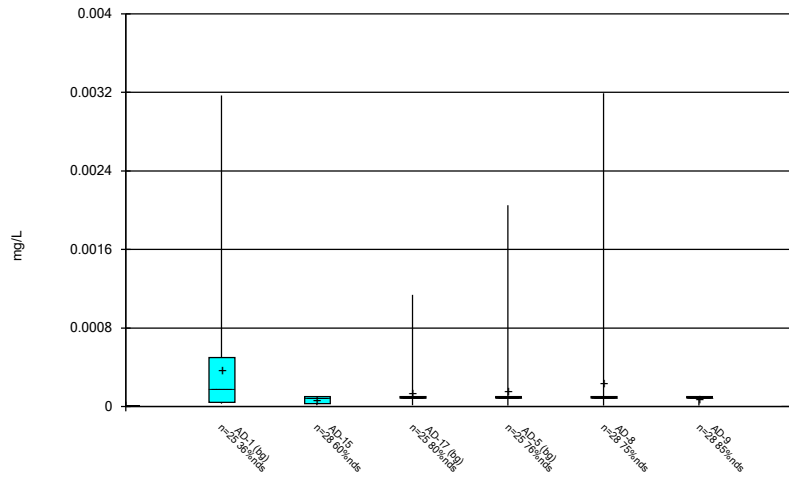
### Time Series



Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:21 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

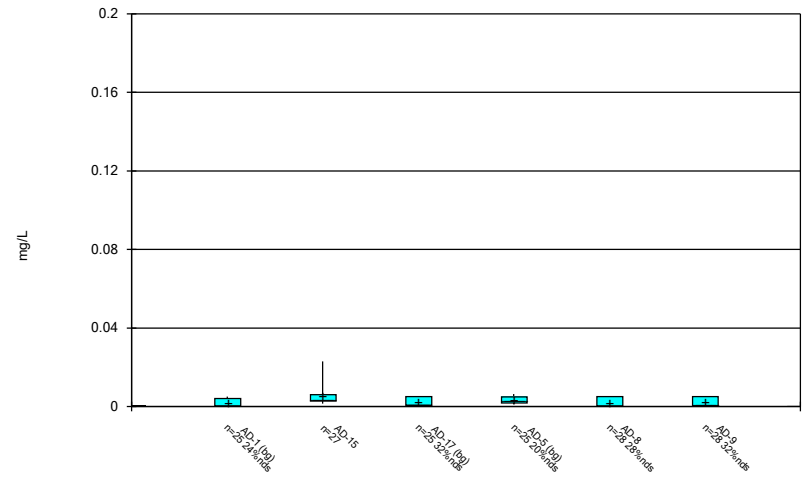
FIGURE B  
Box Plots

Box & Whiskers Plot



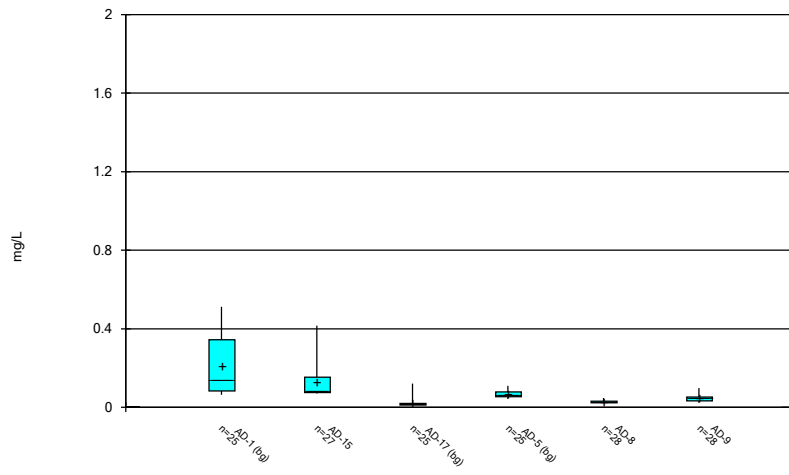
Constituent: Antimony, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



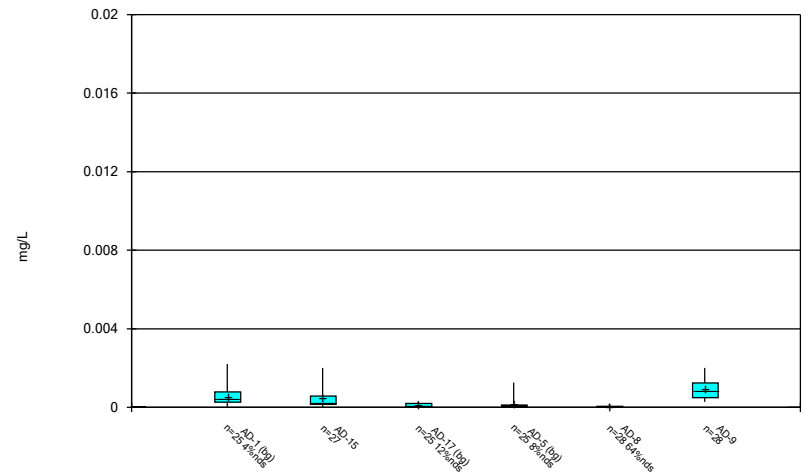
Constituent: Arsenic, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



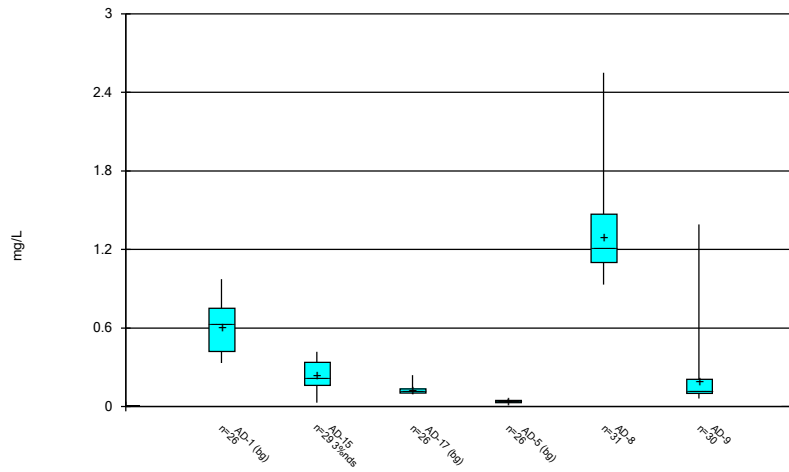
Constituent: Barium, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



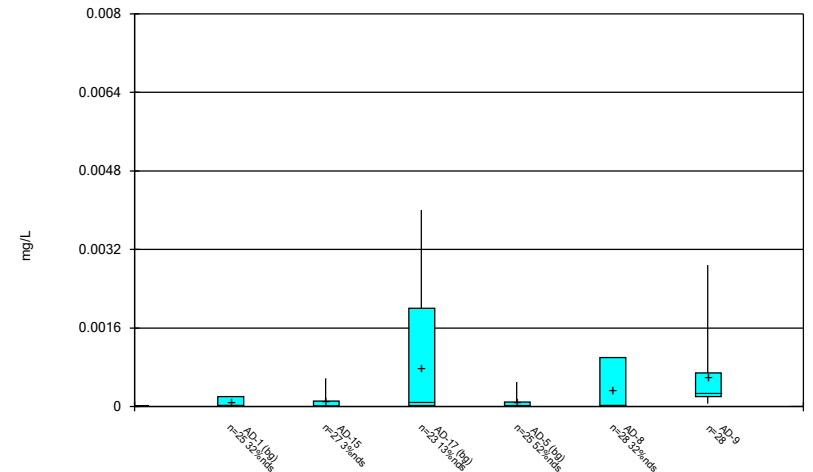
Constituent: Beryllium, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



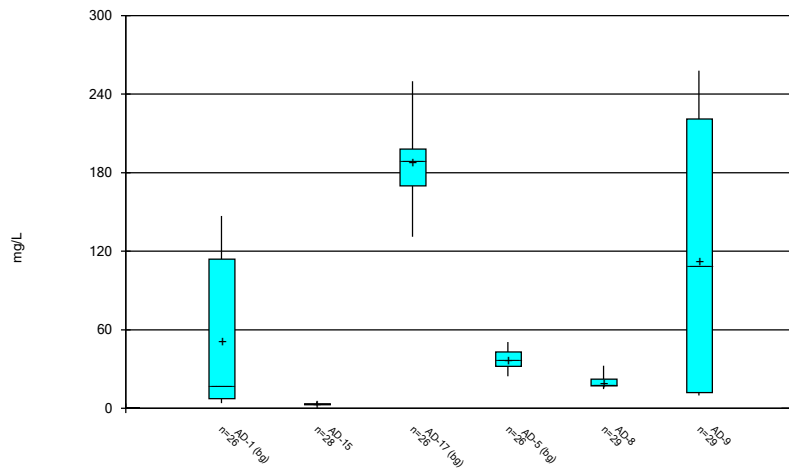
Constituent: Boron, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



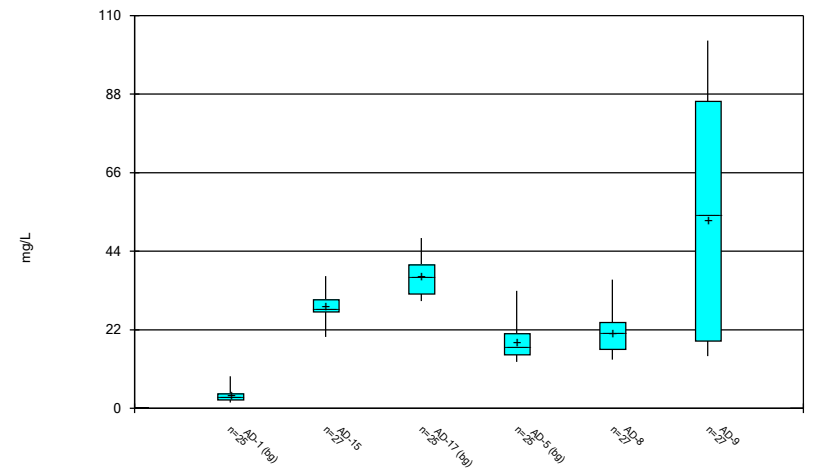
Constituent: Cadmium, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



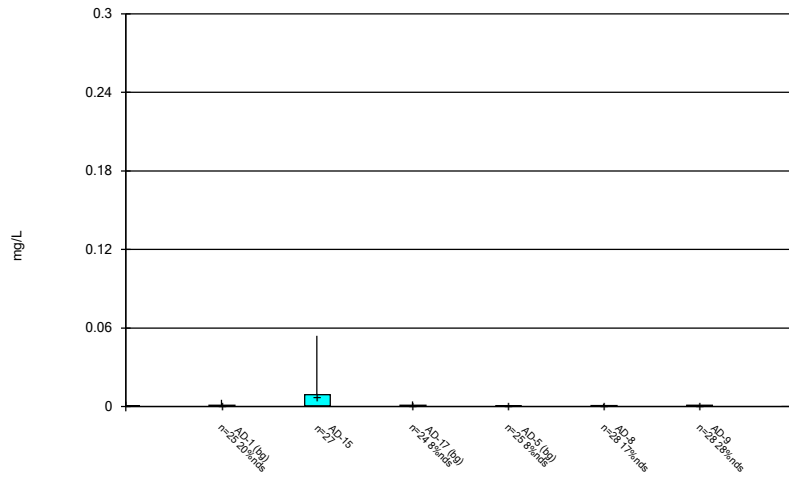
Constituent: Calcium, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



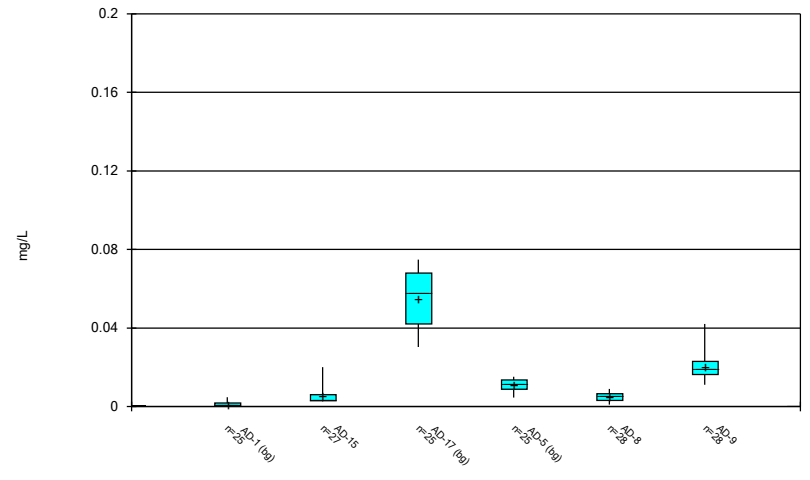
Constituent: Chloride, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Box & Whiskers Plot



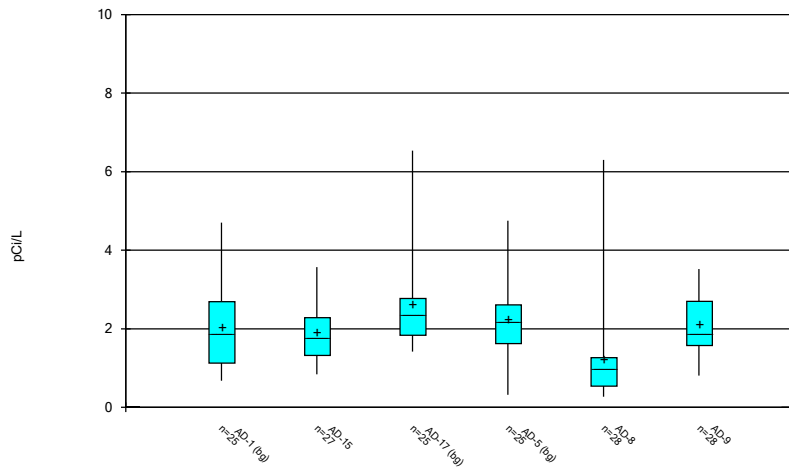
Constituent: Chromium, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Box & Whiskers Plot



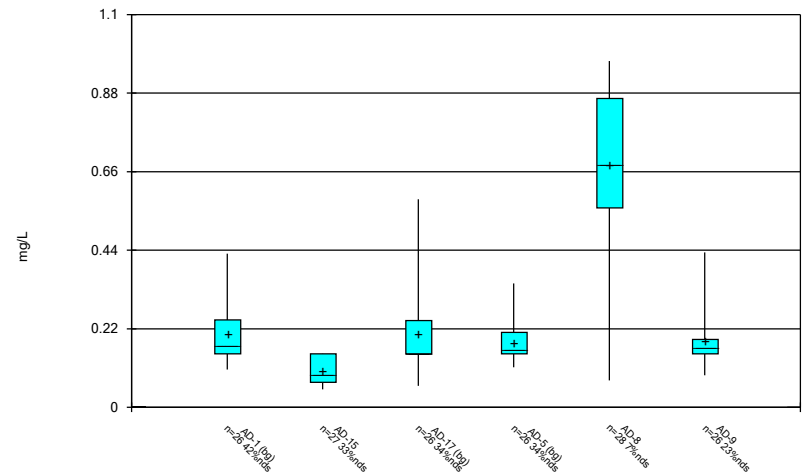
Constituent: Cobalt, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

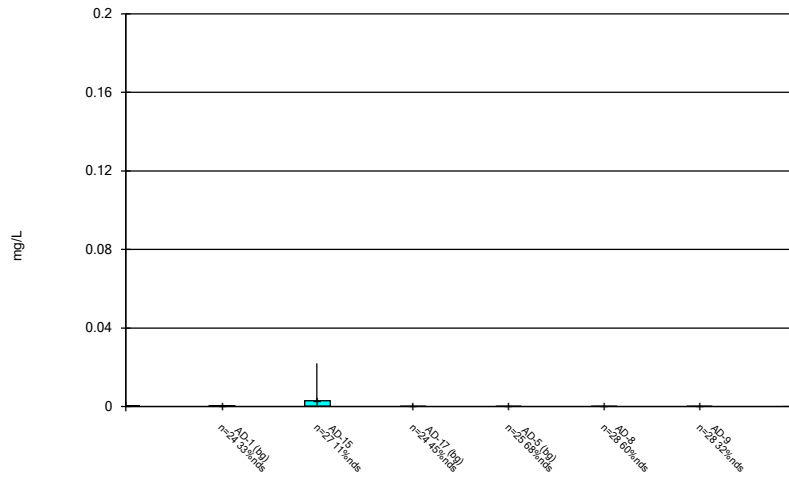
### Box & Whiskers Plot



Constituent: Fluoride, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

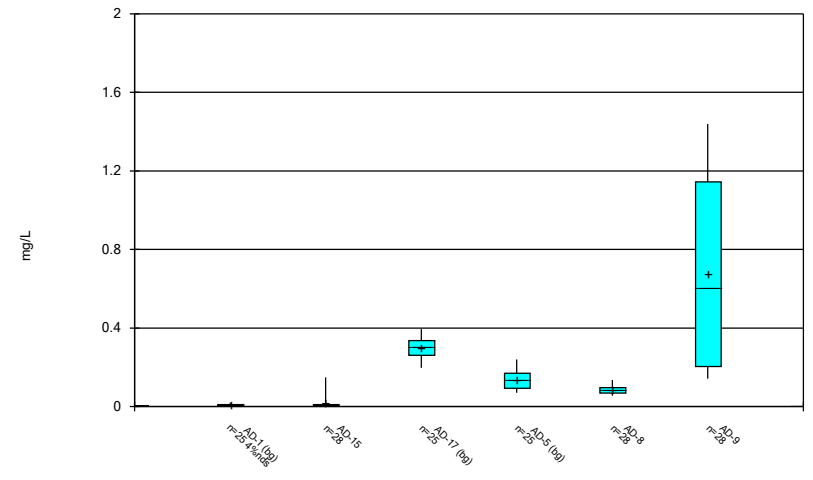


Box & Whiskers Plot



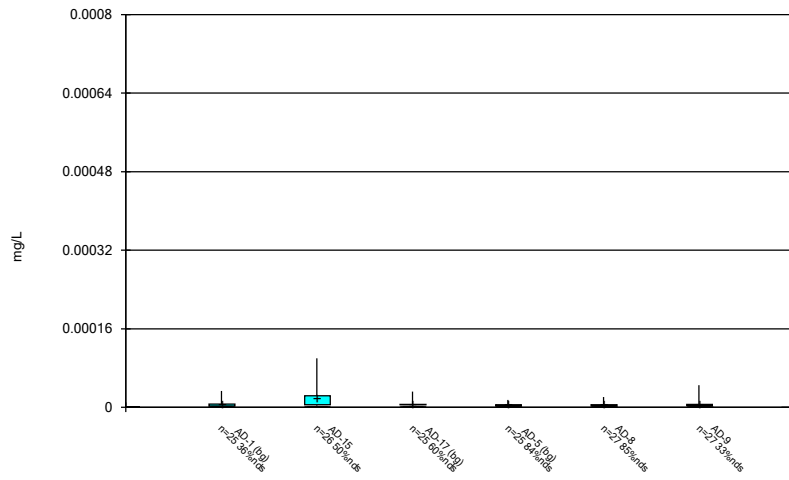
Constituent: Lead, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



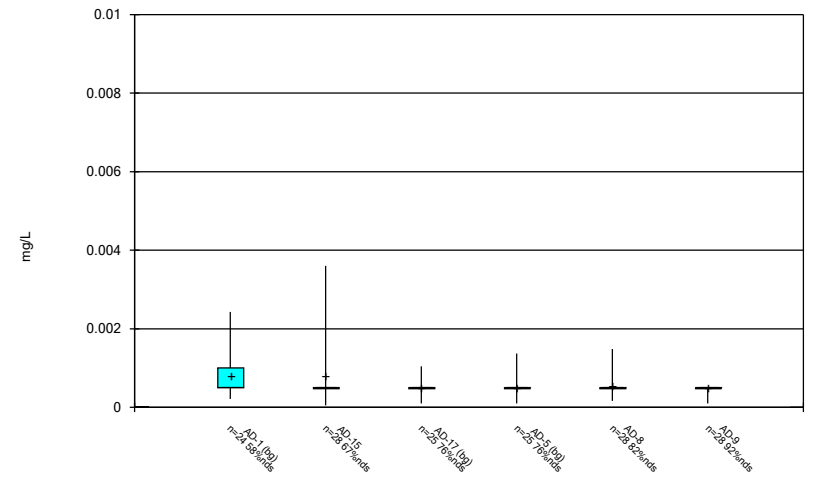
Constituent: Lithium, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



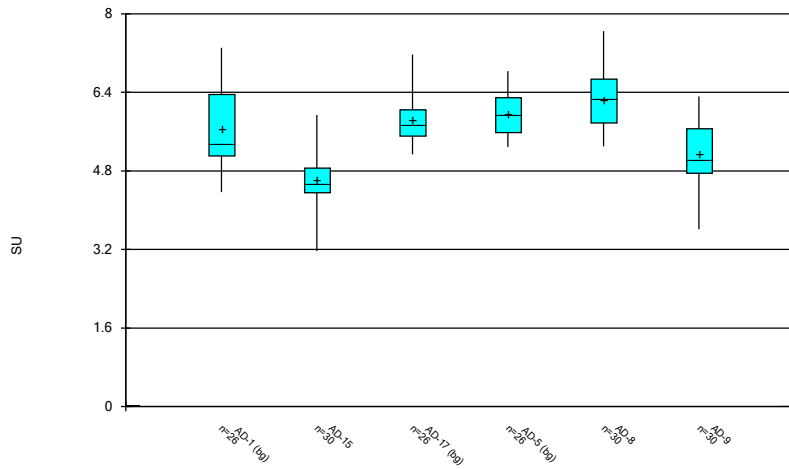
Constituent: Mercury, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



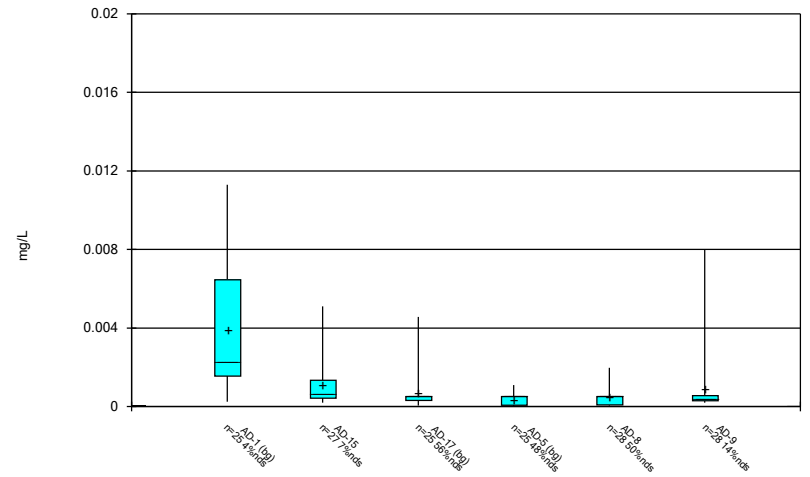
Constituent: Molybdenum, total Analysis Run 11/13/2024 1:22 PM  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



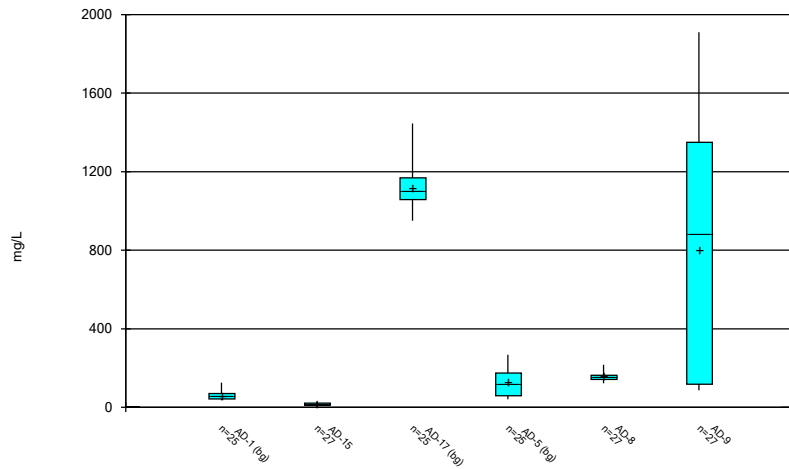
Constituent: pH, field Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



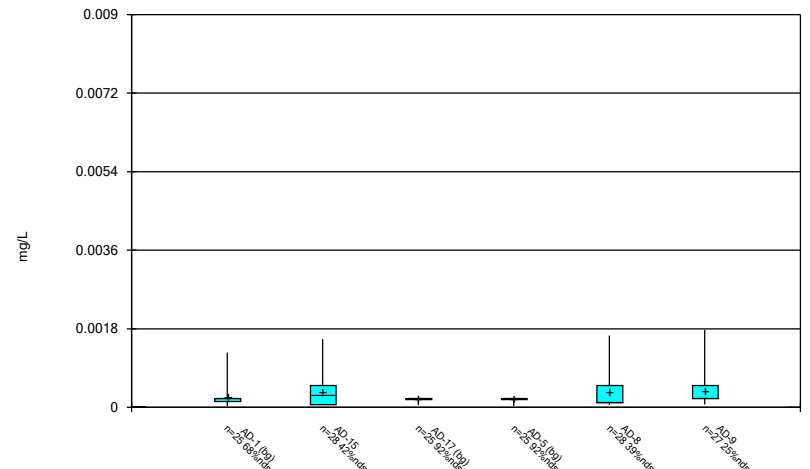
Constituent: Selenium, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



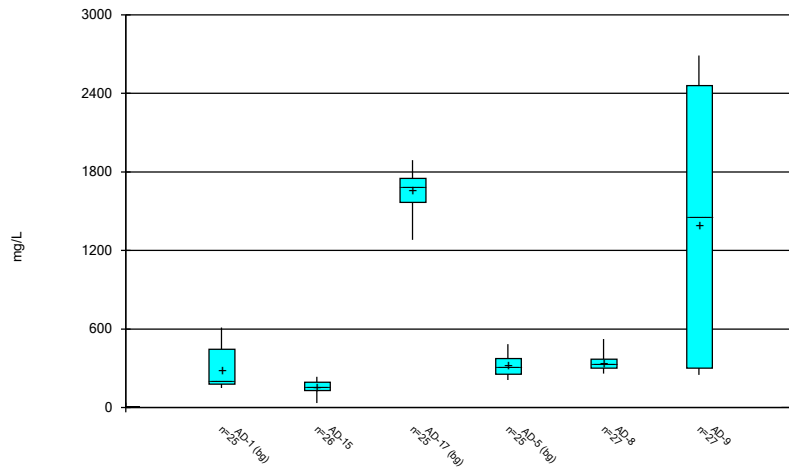
Constituent: Sulfate, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 11/13/2024 1:22 PM  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:22 PM

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

## FIGURE C

Outlier Summary and Tukey's Outlier Test



# Tukey's Outlier Test - Significant Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:30 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>Distr...</u>	<u>Normality Test</u>
Calcium, total (mg/L)	AD-15	Yes	13.7	NP	NaN	29	3.538	2.062	In(x)	ShapiroWilk
Fluoride, total (mg/L)	AD-9	Yes	0.4191,0.4339,0.6227,0.5736	NP	NaN	28	0.214	0.1342	In(x)	ShapiroWilk

# Tukey's Outlier Test - All Results

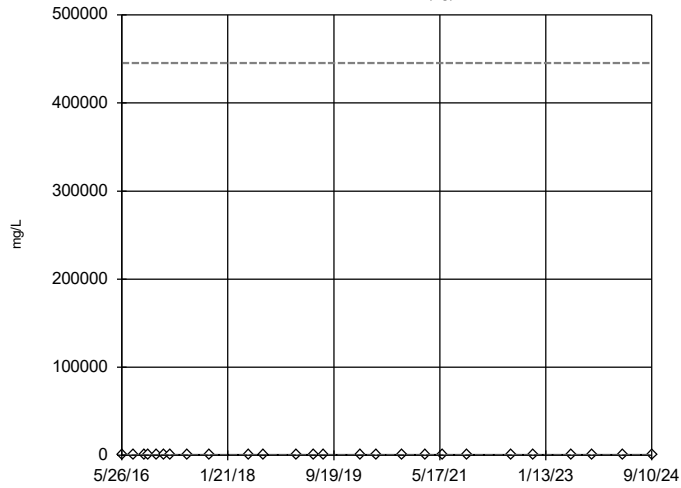
Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:30 PM

Constituent	Well	Outlier	Value(s)	Method	Alpha	N	Mean	Std. Dev.	Distr...	Normality Test
Calcium, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	26	50.9	53.58	ln(x)	ShapiroWilk
<b>Calcium, total (mg/L)</b>	<b>AD-15</b>	<b>Yes</b>	<b>13.7</b>	<b>NP</b>	<b>NaN</b>	<b>29</b>	<b>3.538</b>	<b>2.062</b>	<b>ln(x)</b>	<b>ShapiroWilk</b>
Calcium, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	26	187.8	24.24	sqrt(x)	ShapiroWilk
Calcium, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	26	37.31	7.739	ln(x)	ShapiroWilk
Calcium, total (mg/L)	AD-8	No	n/a	NP	NaN	29	19.6	4.2	ln(x)	ShapiroWilk
Calcium, total (mg/L)	AD-9	No	n/a	NP	NaN	29	111.9	99.89	x^2	ShapiroWilk
Chloride, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	25	3.547	1.522	ln(x)	ShapiroWilk
Chloride, total (mg/L)	AD-15	No	n/a	NP	NaN	27	28.65	3.68	normal	ShapiroWilk
Chloride, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	25	36.86	4.866	ln(x)	ShapiroWilk
Chloride, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	25	18.28	4.408	ln(x)	ShapiroWilk
Chloride, total (mg/L)	AD-8	No	n/a	NP	NaN	27	21.18	5.279	ln(x)	ShapiroWilk
Chloride, total (mg/L)	AD-9	No	n/a	NP	NaN	27	52.81	31.89	x^2	ShapiroWilk
Fluoride, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	26	0.2052	0.07532	ln(x)	ShapiroWilk
Fluoride, total (mg/L)	AD-15	No	n/a	NP	NaN	28	0.1071	0.04806	ln(x)	ShapiroWilk
Fluoride, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	26	0.2057	0.1362	ln(x)	ShapiroWilk
Fluoride, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	26	0.1813	0.05114	ln(x)	ShapiroWilk
Fluoride, total (mg/L)	AD-8	No	n/a	NP	NaN	28	0.6777	0.2242	x^2	ShapiroWilk
<b>Fluoride, total (mg/L)</b>	<b>AD-9</b>	<b>Yes</b>	<b>0.4191,0.4339,0.6227,0.5736</b>	<b>NP</b>	<b>NaN</b>	<b>28</b>	<b>0.214</b>	<b>0.1342</b>	<b>ln(x)</b>	<b>ShapiroWilk</b>
Sulfate, total (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	25	59.87	22.58	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-15	No	n/a	NP	NaN	27	15.22	6.963	normal	ShapiroWilk
Sulfate, total (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	25	1115	93.34	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	25	127.1	68.47	x^(1/3)	ShapiroWilk
Sulfate, total (mg/L)	AD-8	No	n/a	NP	NaN	27	156.6	21.87	ln(x)	ShapiroWilk
Sulfate, total (mg/L)	AD-9	No	n/a	NP	NaN	27	804.1	643.7	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-1 (bg)	No	n/a	NP	NaN	25	289.6	156	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-15	No	n/a	NP	NaN	27	162.5	61.39	sqrt(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-17 (bg)	No	n/a	NP	NaN	25	1666	141.5	x^3	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-5 (bg)	No	n/a	NP	NaN	25	321.2	78.75	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-8	No	n/a	NP	NaN	27	346.9	64.17	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	AD-9	No	n/a	NP	NaN	27	1392	984	normal	ShapiroWilk



### Tukey's Outlier Screening

AD-1 (bg)

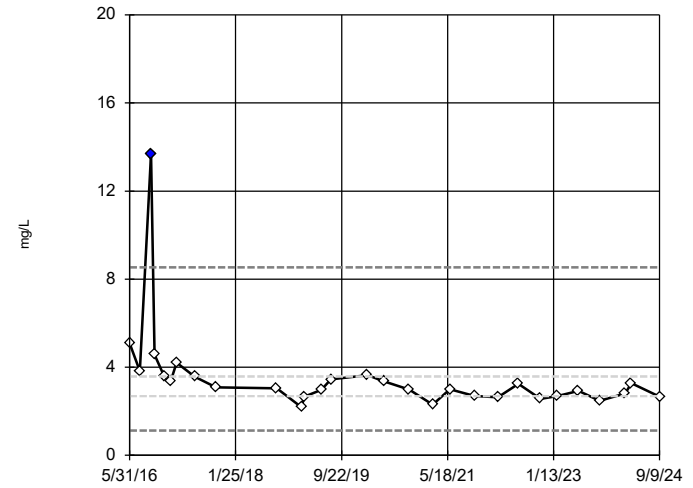


n = 26  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 445328, low cutoff = 0.001853, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-15

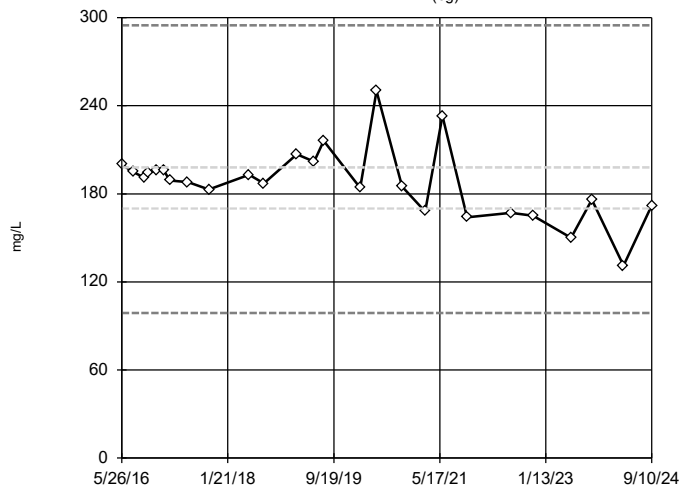


n = 29  
 Outlier is drawn as solid. Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 8.534, low cutoff = 1.128, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-17 (bg)

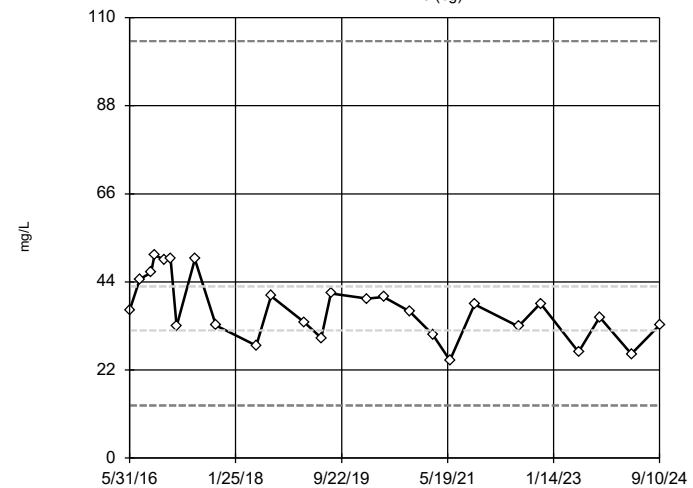


n = 26  
 No outliers found.  
 Tukey's method selected by user.  
 Data were square root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 294.8, low cutoff = 98.79, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-5 (bg)

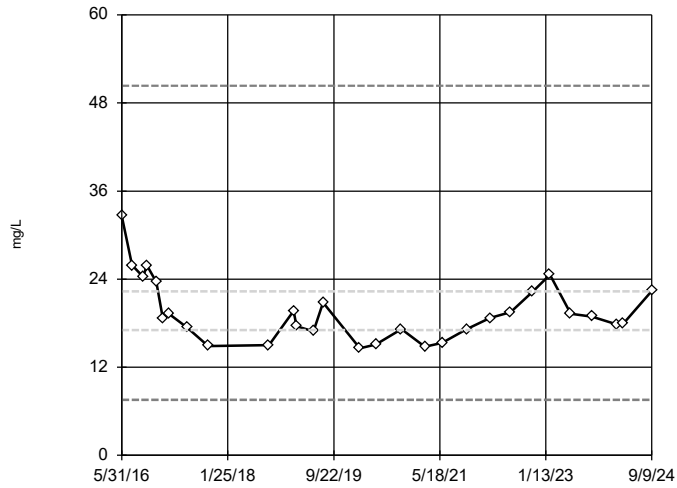


n = 26  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 104.1, low cutoff = 13.12, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-8

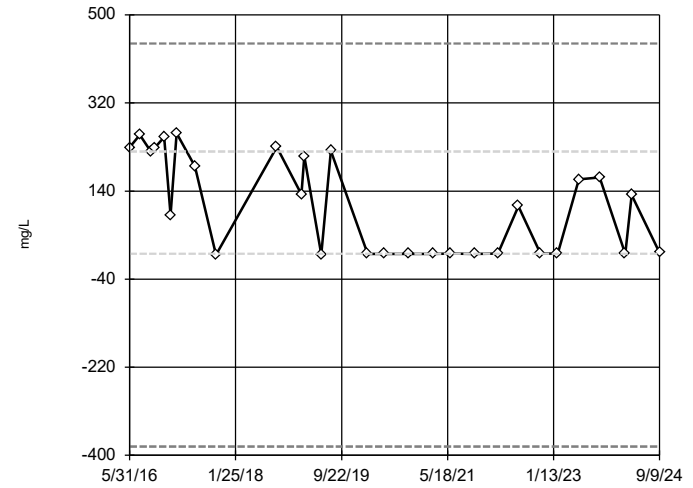


n = 29  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 50.35, low cutoff = 7.568, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-9

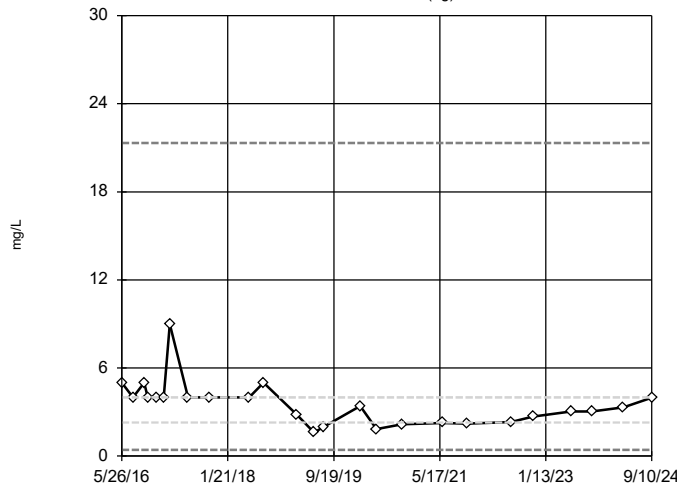


n = 29  
 No outliers found.  
 Tukey's method selected by user.  
 Data were square transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 441.5, low cutoff = -382.1, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-1 (bg)

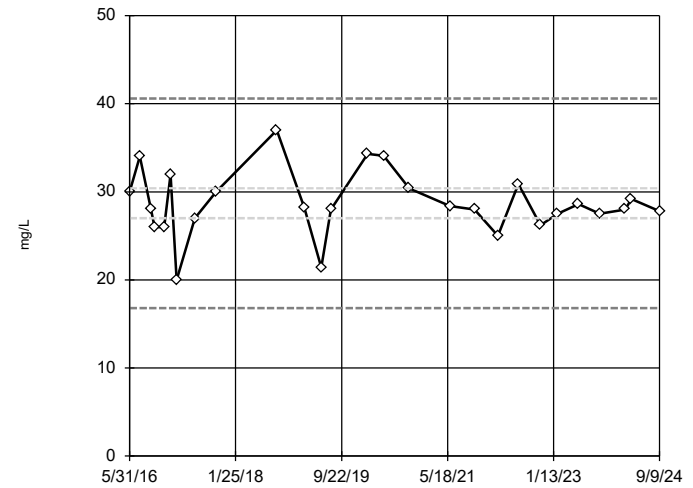


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 21.32, low cutoff = 0.4295, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-15

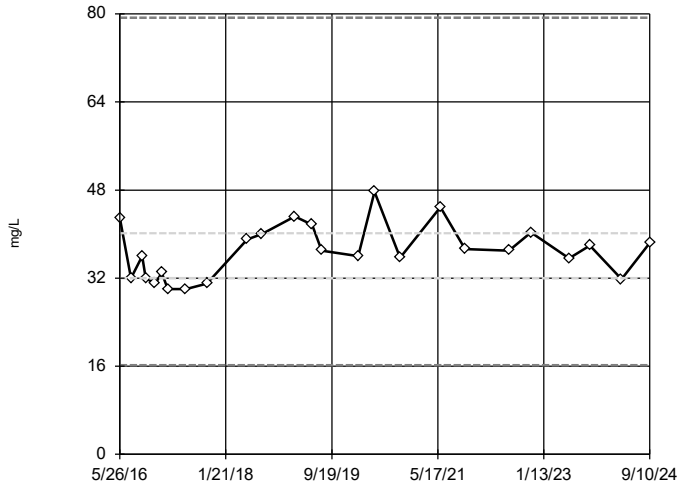


n = 27  
 No outliers found.  
 Tukey's method selected by user.  
 Ladder of Powers transformations did not improve normality; analysis run on raw data.  
 High cutoff = 40.6, low cutoff = 16.8, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-17 (bg)

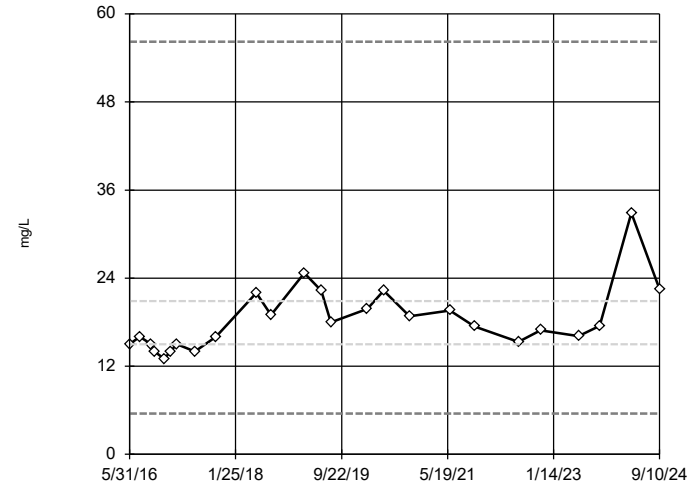


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 79.3, low cutoff = 16.2, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-5 (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 = 56.22, low cutoff = 5.568, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-8

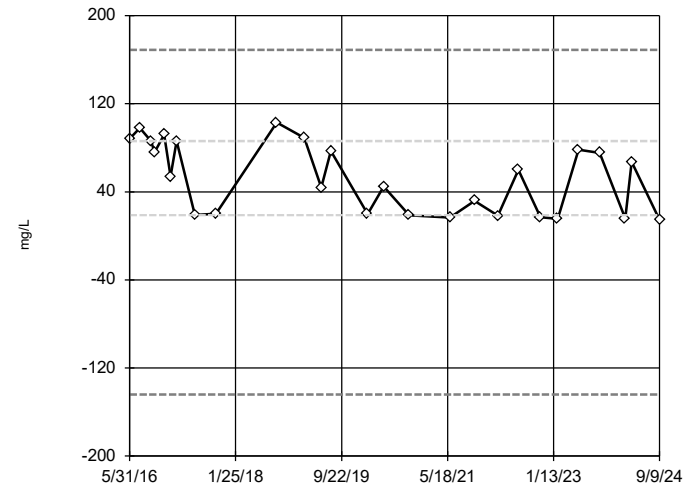


n = 27  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 73.86, low cutoff = 5.362, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-9

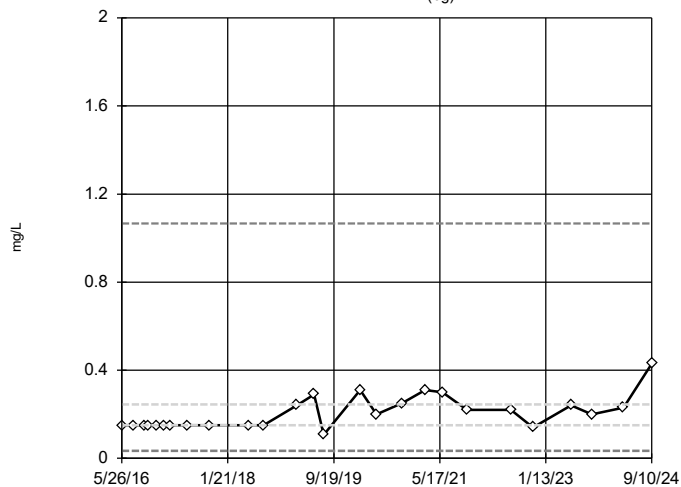


n = 27  
 No outliers found.  
 Tukey's method selected by user.  
 Data were square transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 168.9, low cutoff = -144.1, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-1 (bg)

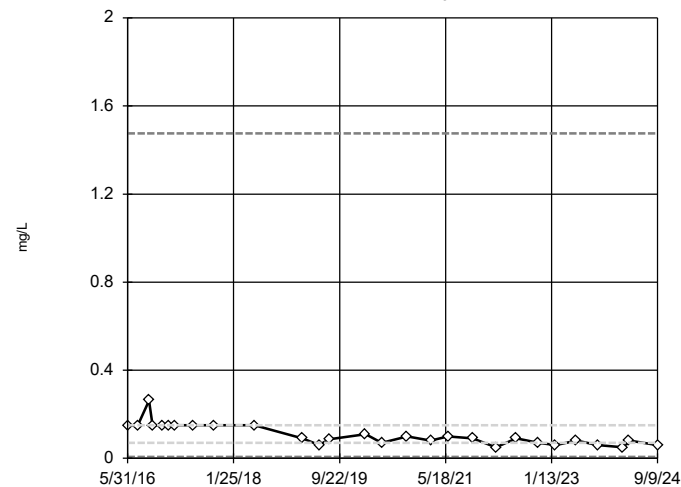


n = 26  
No outliers found.  
Tukey's method selected by user.  
Data were natural log transformed to achieve best W statistic (graph shown in original units).  
High cutoff = 1.067, low cutoff = 0.03445, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-15

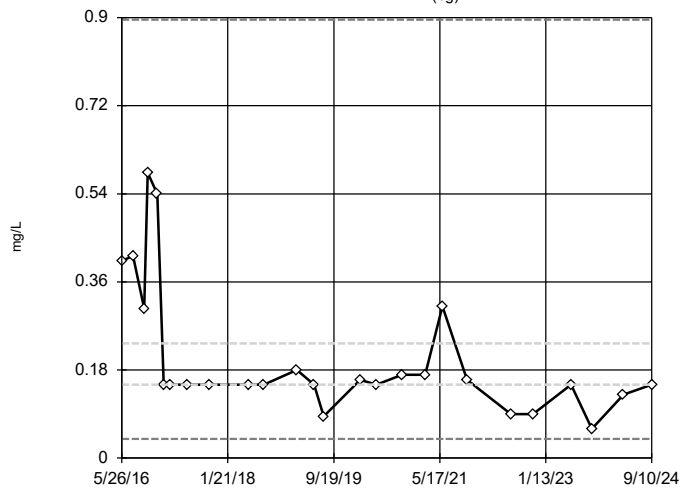


n = 28  
No outliers found.  
Tukey's method selected by user.  
Data were natural log transformed to achieve best W statistic (graph shown in original units).  
High cutoff = 1.476, low cutoff = 0.007114, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-17 (bg)

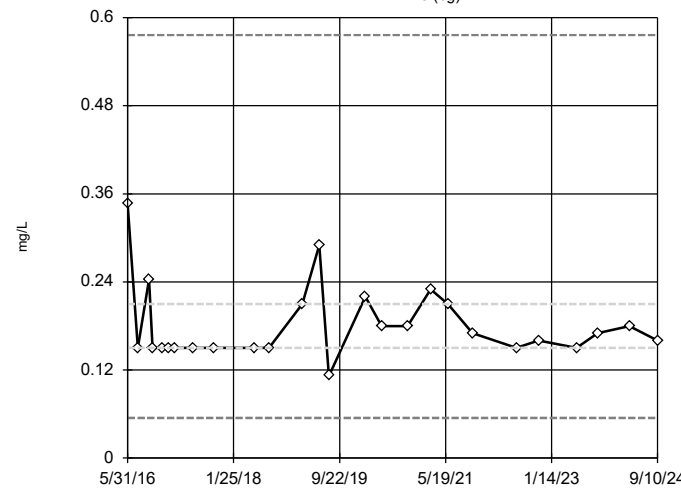


n = 26  
No outliers found.  
Tukey's method selected by user.  
Data were natural log transformed to achieve best W statistic (graph shown in original units).  
High cutoff = 0.896, low cutoff = 0.03926, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-5 (bg)

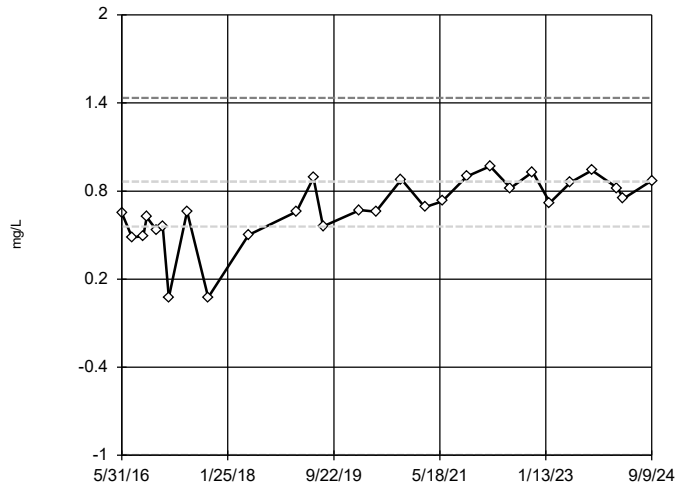


n = 26  
No outliers found.  
Tukey's method selected by user.  
Data were natural log transformed to achieve best W statistic (graph shown in original units).  
High cutoff = 0.5762, low cutoff = 0.05466, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-8



n = 28

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

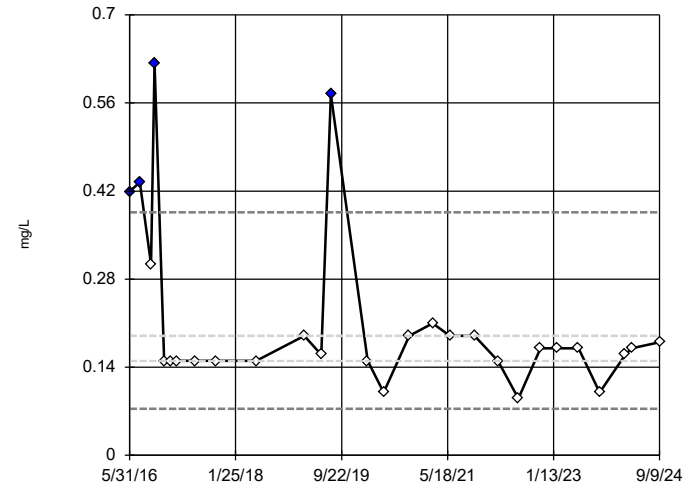
Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.435, low cutoff = -0.9992, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-9



n = 28

Outliers are drawn as solid. Tukey's method selected by user.

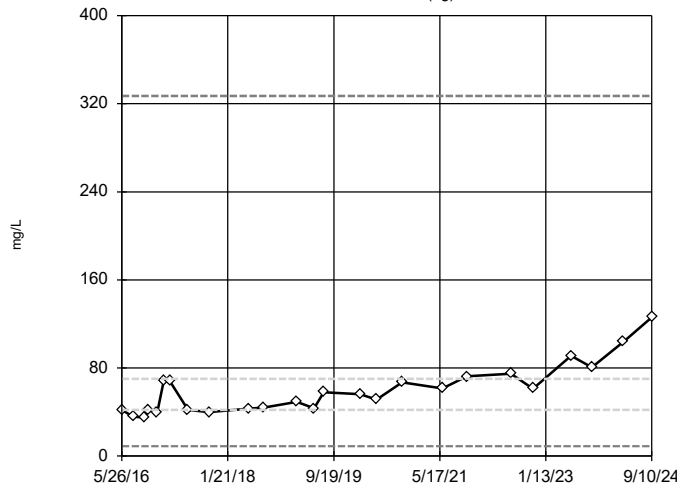
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.3861, low cutoff = 0.07381, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-1 (bg)



n = 25

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

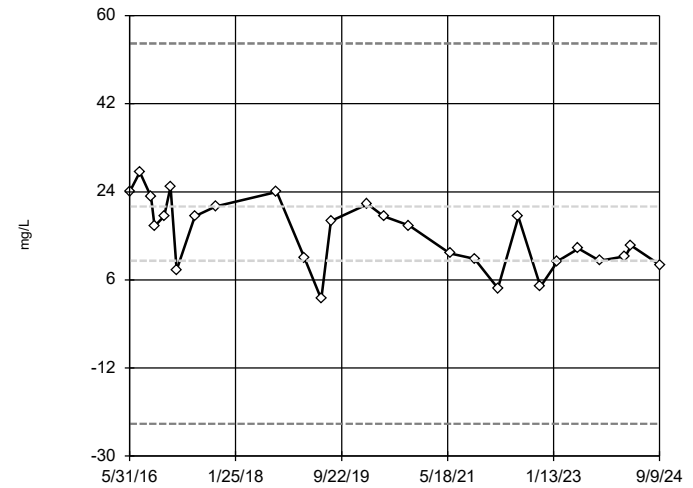
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 327.2, low cutoff = 9.008, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-15



n = 27

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

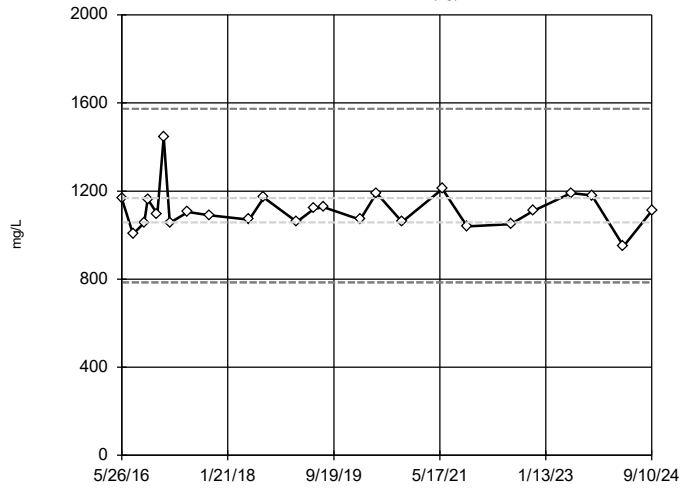
Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 54.3, low cutoff = -23.4, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-17 (bg)

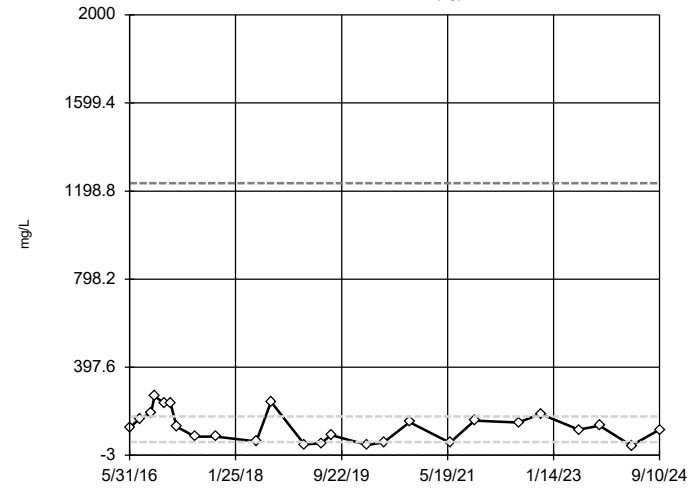


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 1574, low cutoff = 784.9, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-5 (bg)

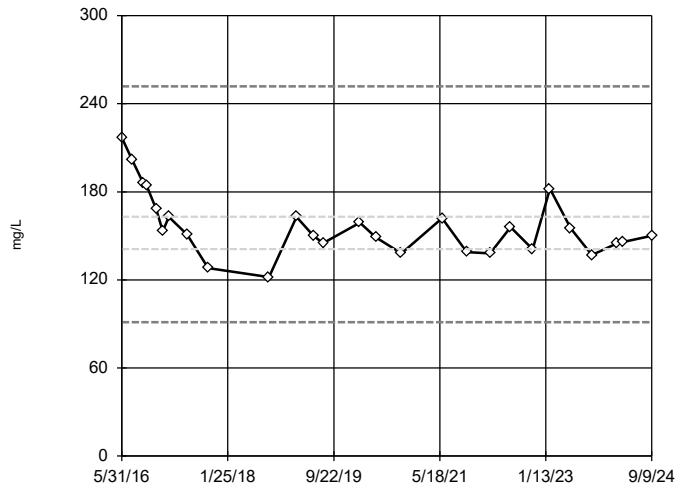


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were cube root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 1234, low cutoff = -2.108, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-8

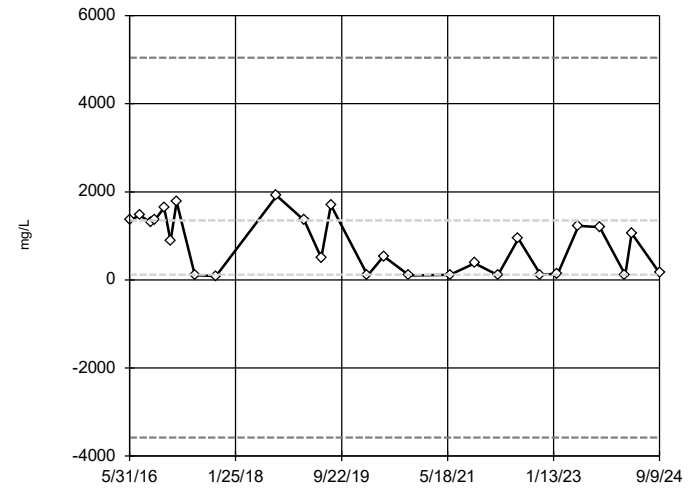


n = 27  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 251.8, low cutoff = 91.27, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-9

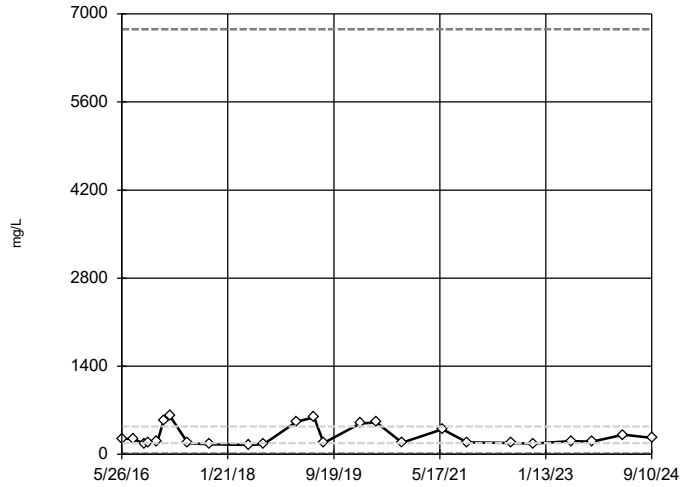


n = 27  
 No outliers found.  
 Tukey's method selected by user.  
 Ladder of Powers transformations did not improve normality; analysis run on raw data.  
 High cutoff = 5046, low cutoff = -3578, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-1 (bg)

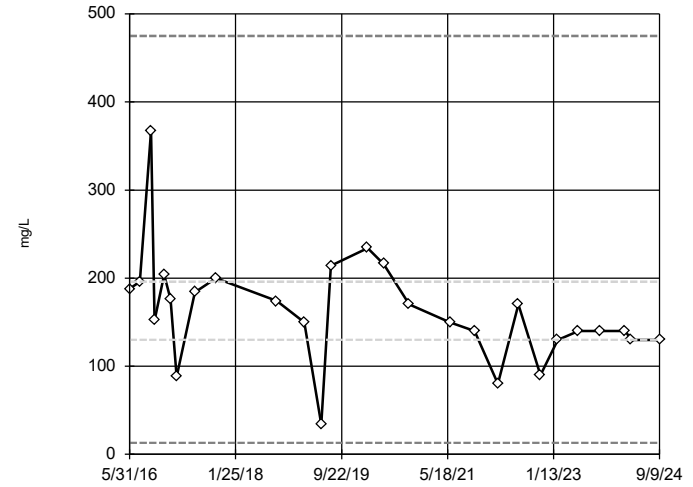


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 6757, low cutoff = 11.64, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-15

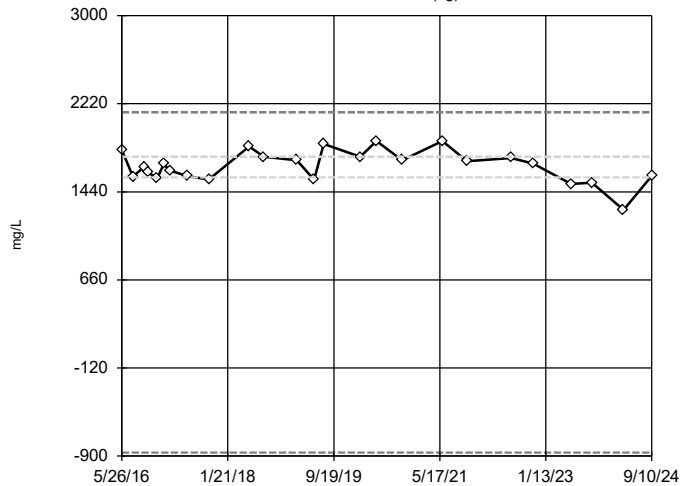


n = 27  
 No outliers found.  
 Tukey's method selected by user.  
 Data were square root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 475, low cutoff = 13.01, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-17 (bg)

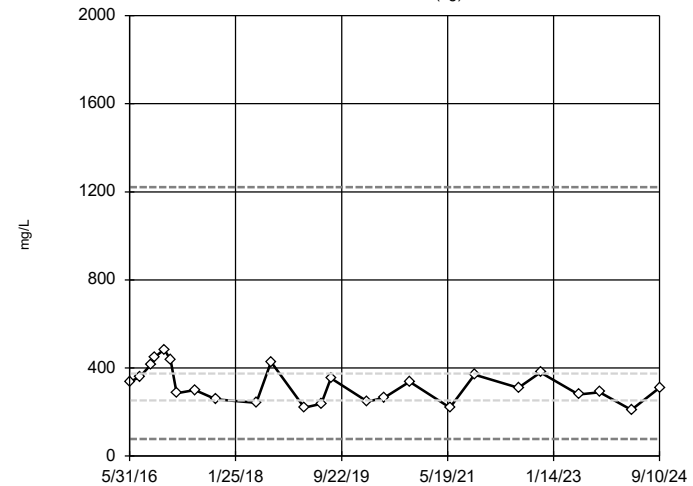


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were cube transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 2145, low cutoff = -869.1, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-5 (bg)

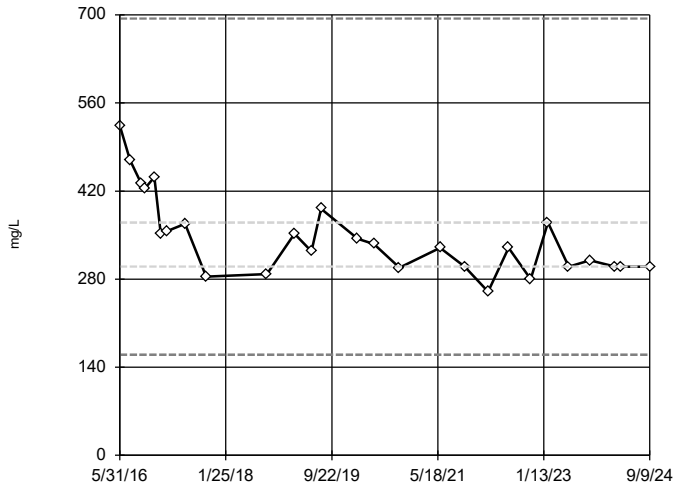


n = 25  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 1221, low cutoff = 77.65, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:28 PM View: Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-8



n = 27

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

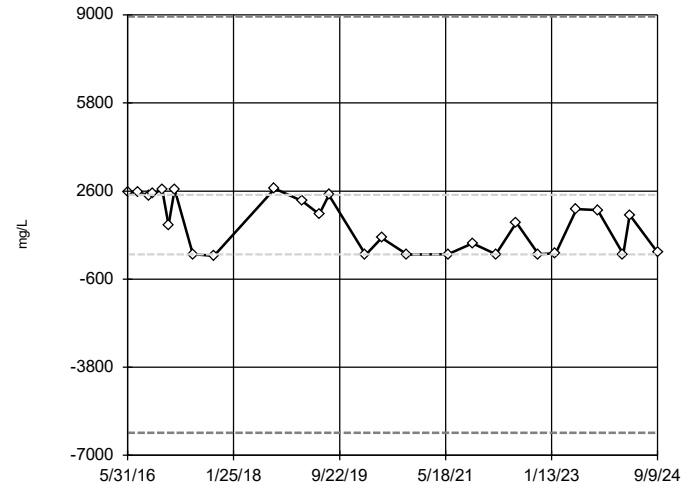
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 694.1, low cutoff = 159.9, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening

AD-9



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 = 8940, low cutoff = -6180, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:28 PM View: Outliers  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



# Tukey's Outlier Test - Upgradient Wells - Significant Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:35 PM

Constituent	Well	Outlier	Value(s)	Method	Alpha	N	Mean	Std. Dev.	Distr...	Normality Test
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

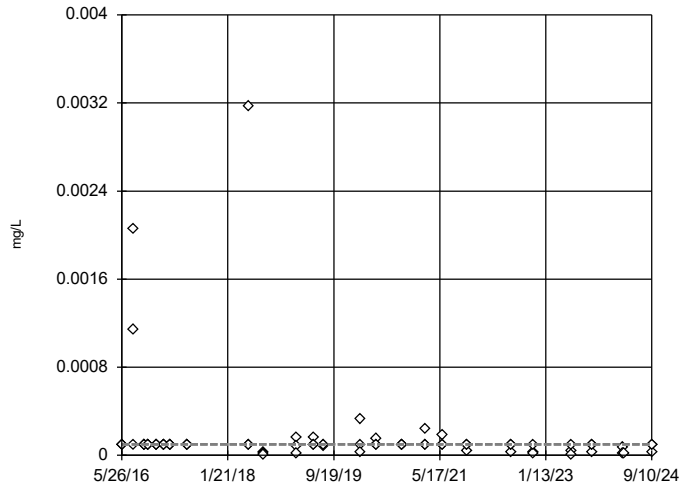
# Tukey's Outlier Test - Upgradient Wells - All Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:35 PM

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

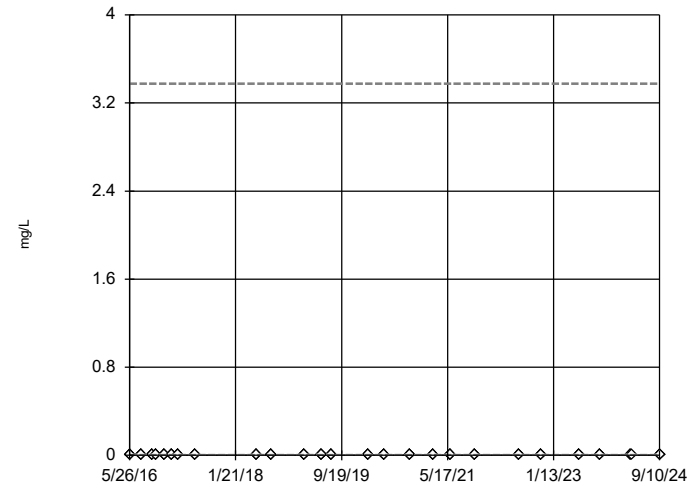


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

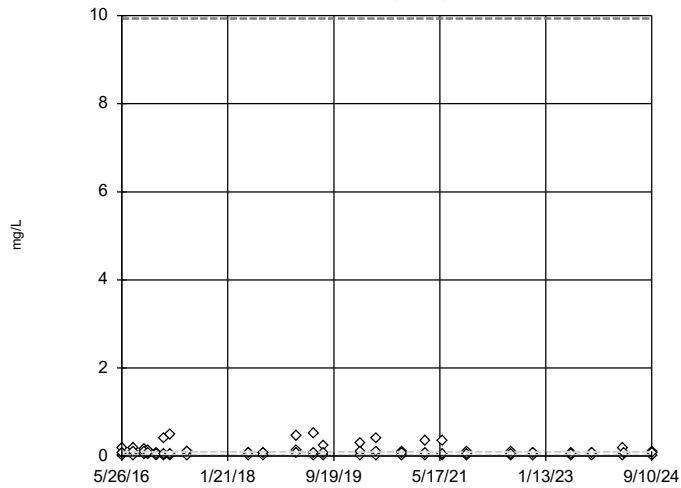


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 3.375, low cutoff = 8.4e-7, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

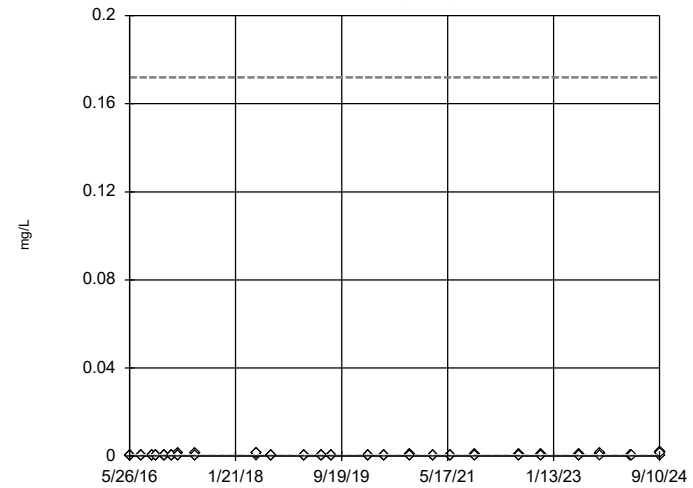


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 9.935, low cutoff = 0.0001835, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

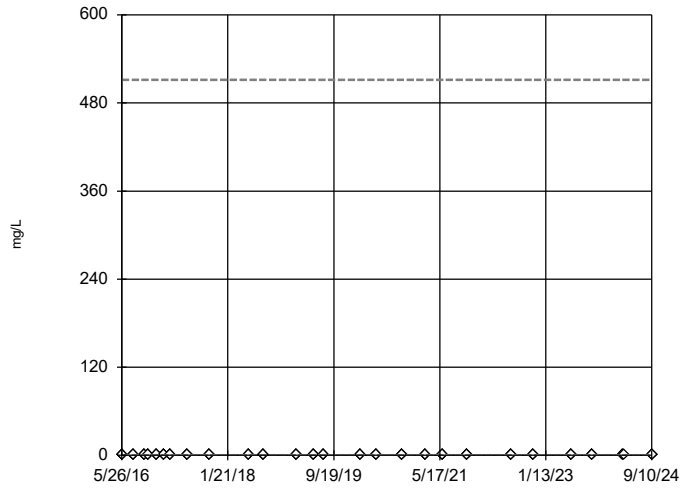


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.1719, low cutoff = 1.1e-7, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

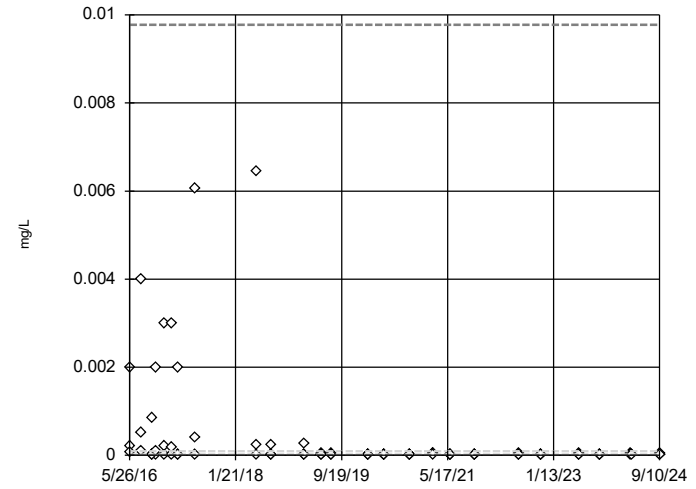


n = 78  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 511.6, low cutoff = 0.00003714, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

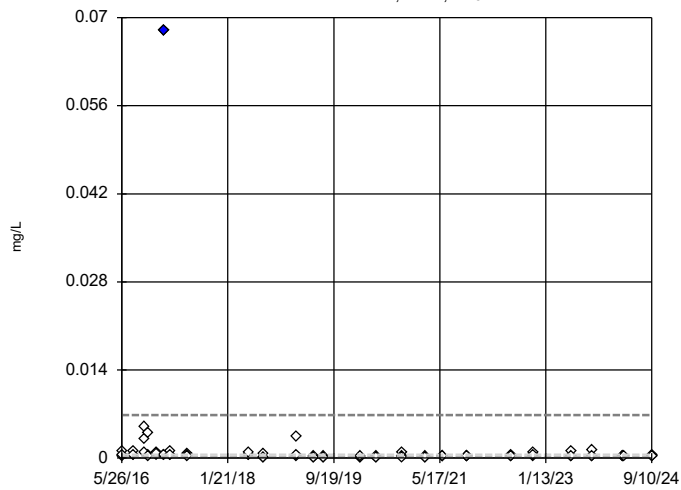


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.009774, low cutoff = 1.9e-7, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

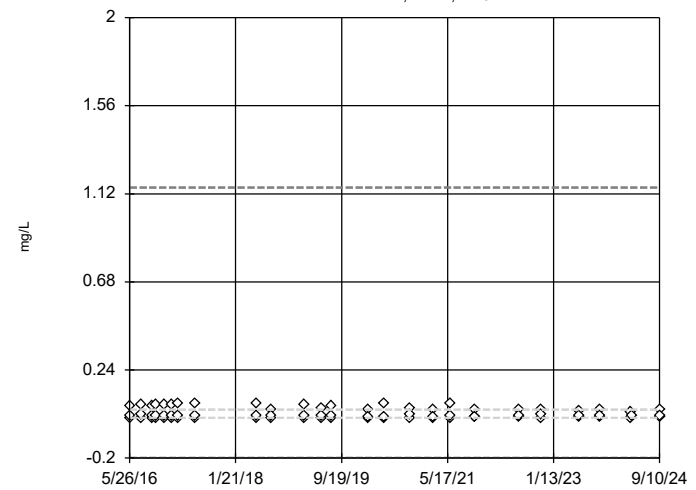


n = 75  
 Outlier is drawn as solid.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.006842, low cutoff = 0.00001949, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

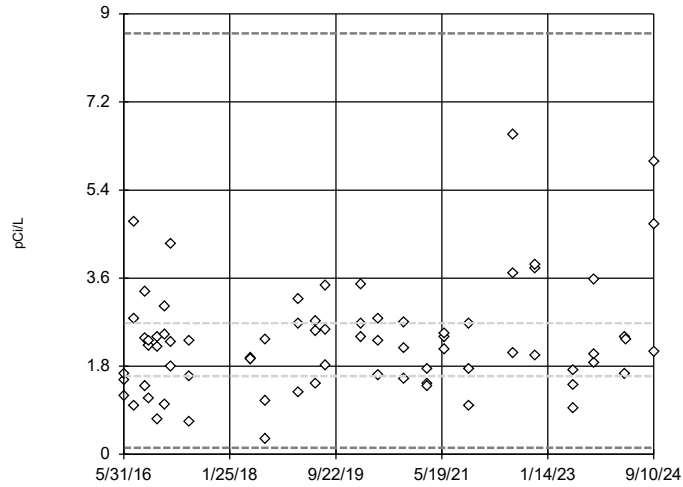


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were cube root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 1.151, low cutoff = -0.1996, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

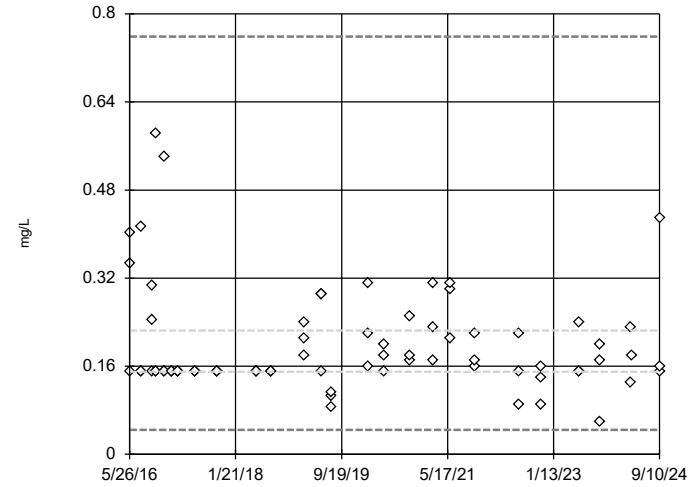


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were cube root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 8.6, low cutoff = 0.1322, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

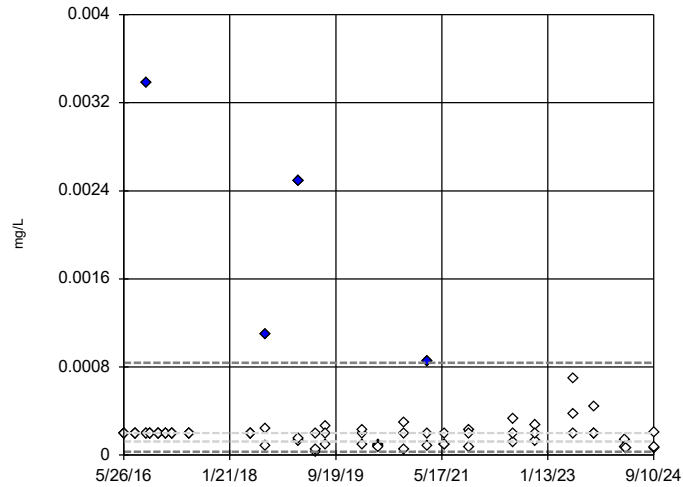


n = 78  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.7586, low cutoff = 0.04448, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

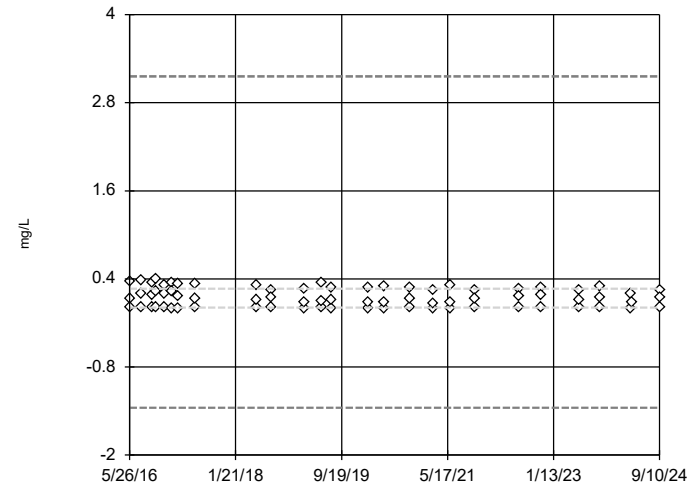


n = 75  
 Outliers are drawn as solid.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.0008392, low cutoff = 0.00002955, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

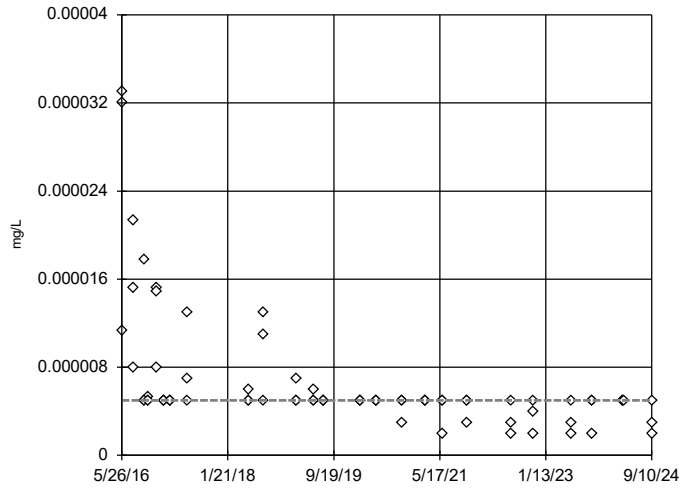


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were square root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 3.159, low cutoff = -1.355, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

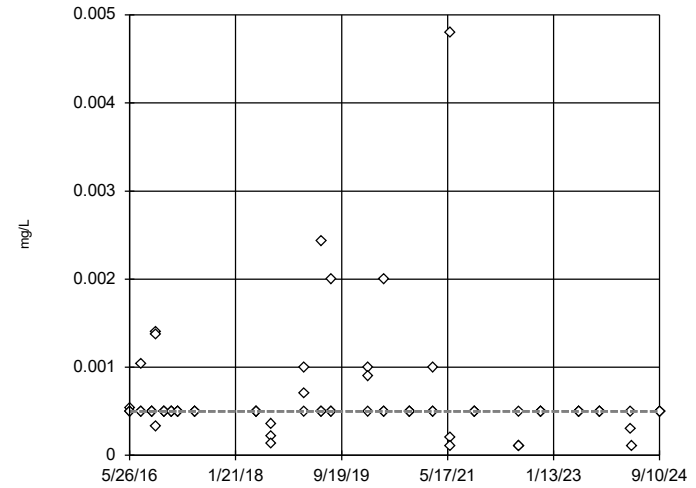


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

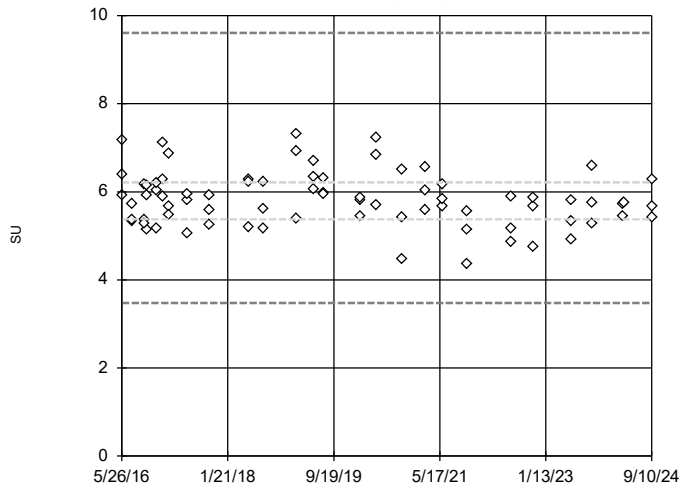


n = 75  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum, total Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Tukey's Outlier Screening, Pooled Background

AD-1,AD-17,AD-5

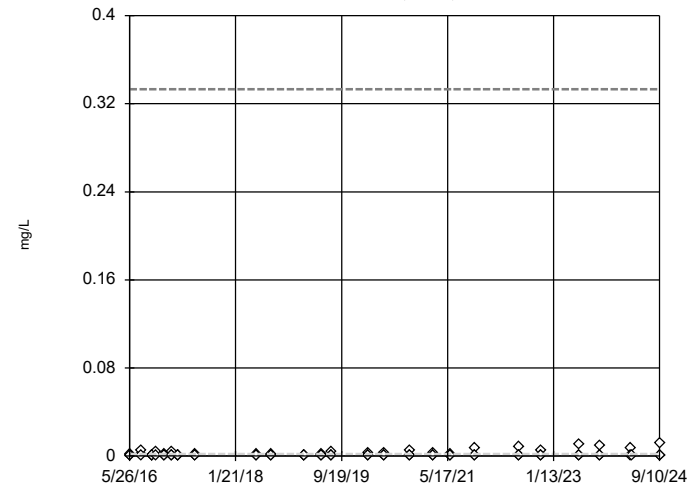


n = 78  
 No outliers found.  
 Tukey's method selected by user.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 9.608, low cutoff = 3.477, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/13/2024 1:32 PM View: Upgradient Outliers  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP



FIGURE D  
Mann-Whitney



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

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/15/2024, 8:46 AM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.01</u>	<u>Method</u>
Calcium, total (mg/L)	AD-17 (bg)	-2.854	Yes	Mann-W
Fluoride, total (mg/L)	AD-15	-2.96	Yes	Mann-W
Sulfate, total (mg/L)	AD-1 (bg)	2.598	Yes	Mann-W

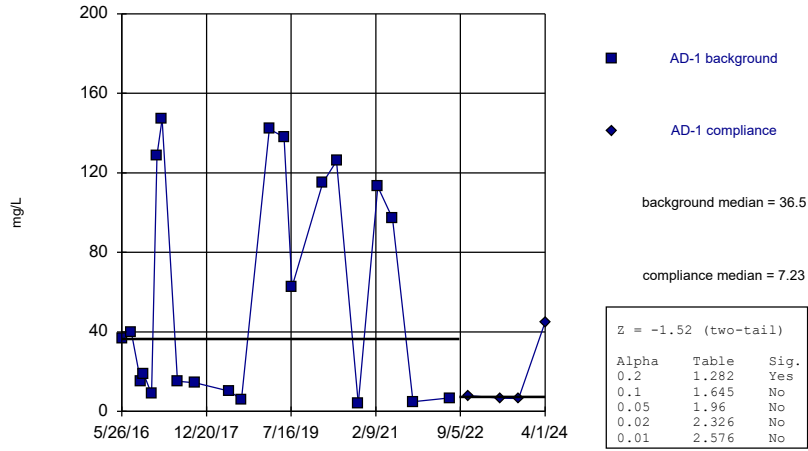
# Welch's t-test/Mann-Whitney - All Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/15/2024, 8:46 AM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.01</u>	<u>Method</u>
Calcium, total (mg/L)	AD-1 (bg)	-1.52	No	Mann-W
Calcium, total (mg/L)	AD-15	-1.983	No	Mann-W
<b>Calcium, total (mg/L)</b>	<b>AD-17 (bg)</b>	<b>-2.854</b>	<b>Yes</b>	<b>Mann-W</b>
Calcium, total (mg/L)	AD-5 (bg)	-1.594	No	Mann-W
Calcium, total (mg/L)	AD-8	1.008	No	Mann-W
Calcium, total (mg/L)	AD-9	-0.588	No	Mann-W
Chloride, total (mg/L)	AD-1 (bg)	-0.7458	No	Mann-W
Chloride, total (mg/L)	AD-15	-0.8539	No	Mann-W
Chloride, total (mg/L)	AD-17 (bg)	-0.1163	No	Mann-W
Chloride, total (mg/L)	AD-5 (bg)	0.8151	No	Mann-W
Chloride, total (mg/L)	AD-8	1.325	No	Mann-W
Chloride, total (mg/L)	AD-9	-1.491	No	Mann-W
Fluoride, total (mg/L)	AD-1 (bg)	0.1163	No	Mann-W
<b>Fluoride, total (mg/L)</b>	<b>AD-15</b>	<b>-2.96</b>	<b>Yes</b>	<b>Mann-W</b>
Fluoride, total (mg/L)	AD-17 (bg)	-2.199	No	Mann-W
Fluoride, total (mg/L)	AD-5 (bg)	-0.418	No	Mann-W
Fluoride, total (mg/L)	AD-8	2.392	No	Mann-W
Fluoride, total (mg/L)	AD-9	-0.09653	No	Mann-W
<b>Sulfate, total (mg/L)</b>	<b>AD-1 (bg)</b>	<b>2.598</b>	<b>Yes</b>	<b>Mann-W</b>
Sulfate, total (mg/L)	AD-15	-2.162	No	Mann-W
Sulfate, total (mg/L)	AD-17 (bg)	0.4652	No	Mann-W
Sulfate, total (mg/L)	AD-5 (bg)	-0.4261	No	Mann-W
Sulfate, total (mg/L)	AD-8	-0.9742	No	Mann-W
Sulfate, total (mg/L)	AD-9	-0.6392	No	Mann-W
Total Dissolved Solids (mg/L)	AD-1 (bg)	-0.2325	No	Mann-W
Total Dissolved Solids (mg/L)	AD-15	-2.424	No	Mann-W
Total Dissolved Solids (mg/L)	AD-17 (bg)	-2.442	No	Mann-W
Total Dissolved Solids (mg/L)	AD-5 (bg)	-0.8135	No	Mann-W
Total Dissolved Solids (mg/L)	AD-8	-1.647	No	Mann-W
Total Dissolved Solids (mg/L)	AD-9	-0.884	No	Mann-W

### Mann-Whitney (Wilcoxon Rank Sum)

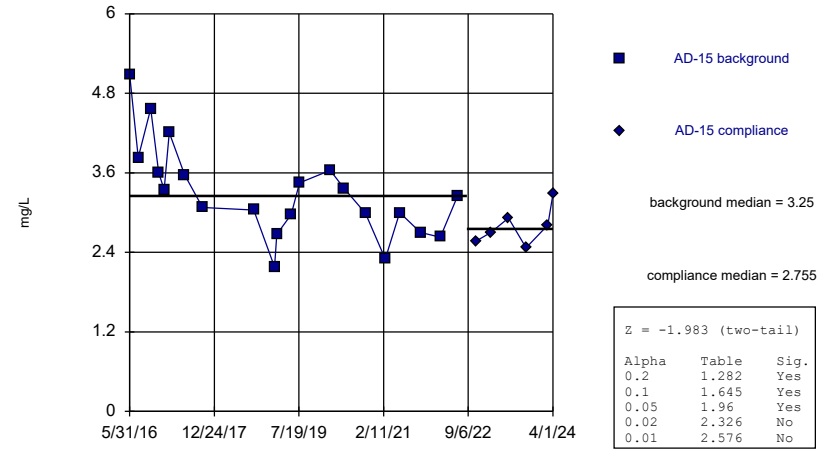
AD-1 (bg)



Constituent: Calcium, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

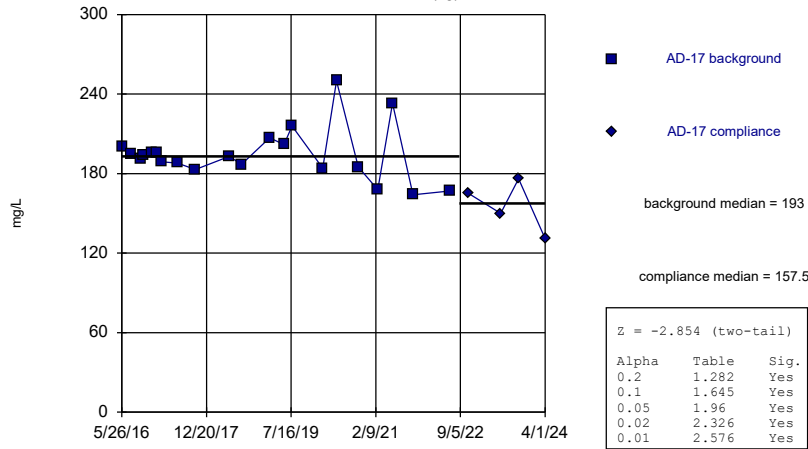
AD-15



Constituent: Calcium, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

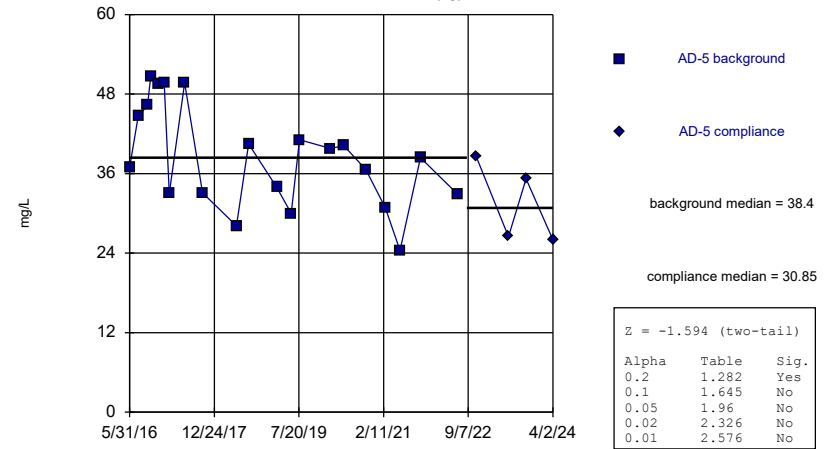
AD-17 (bg)



Constituent: Calcium, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

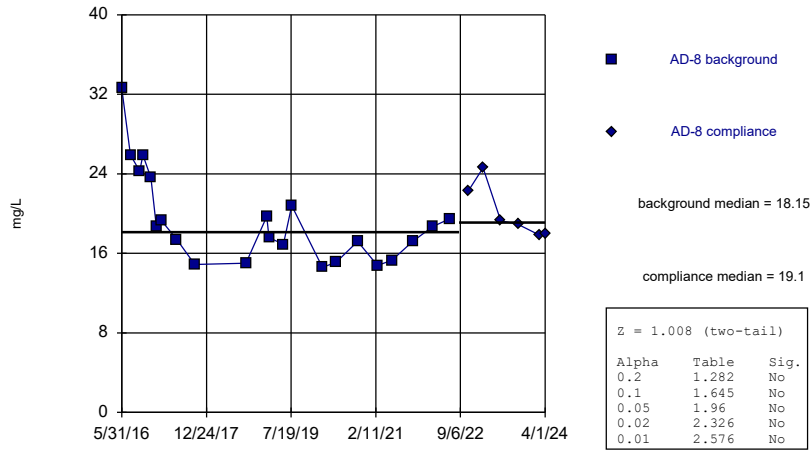
AD-5 (bg)



Constituent: Calcium, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

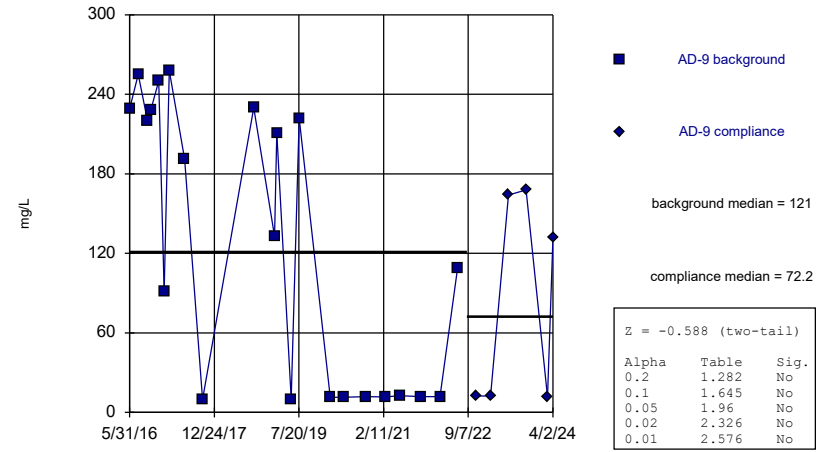
AD-8



Constituent: Calcium, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

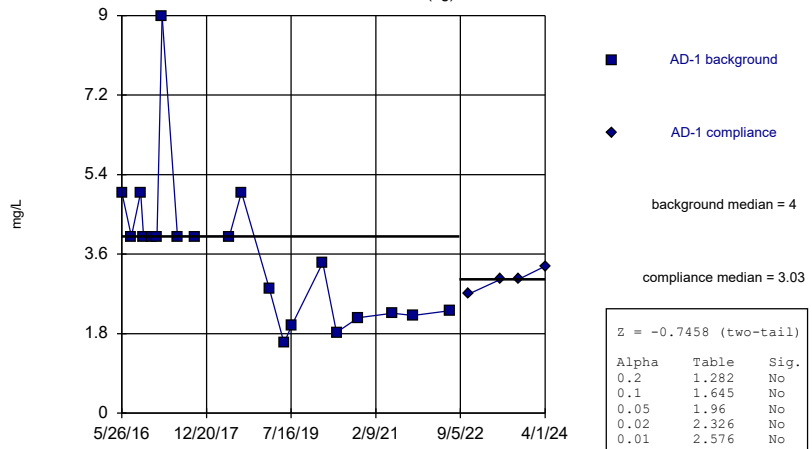
AD-9



Constituent: Calcium, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

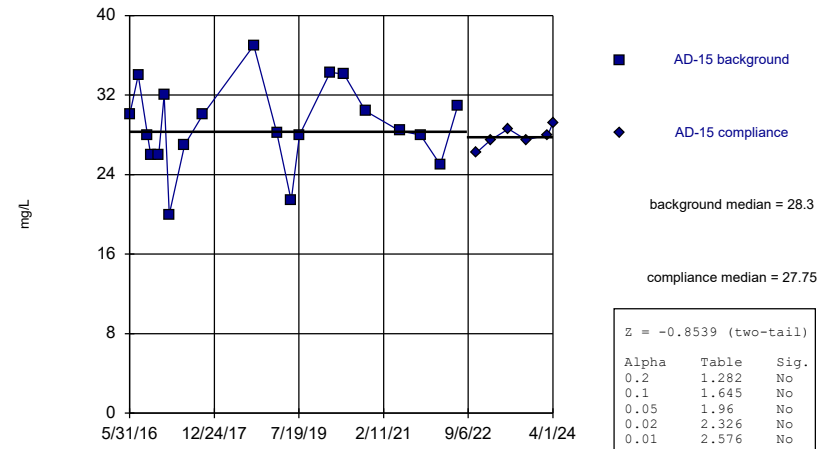
AD-1 (bg)



Constituent: Chloride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

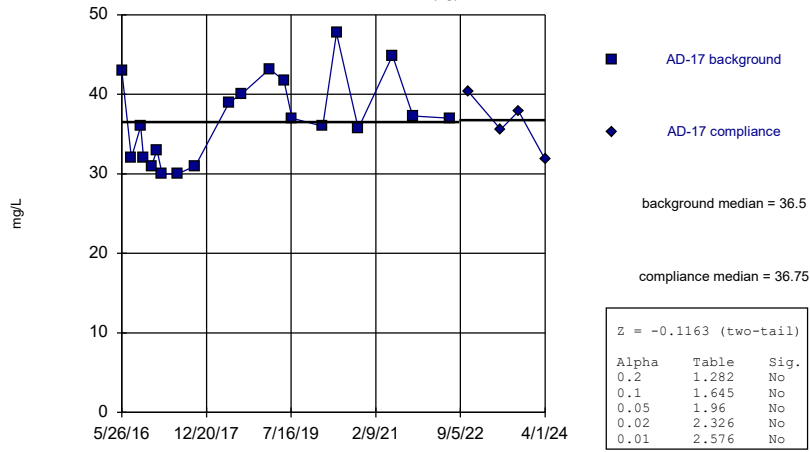
AD-15



Constituent: Chloride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Mann-Whitney (Wilcoxon Rank Sum)

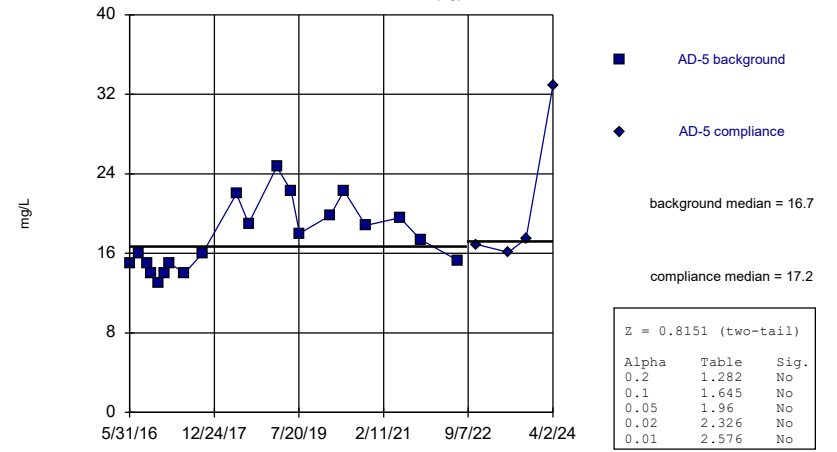
AD-17 (bg)



Constituent: Chloride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Mann-Whitney (Wilcoxon Rank Sum)

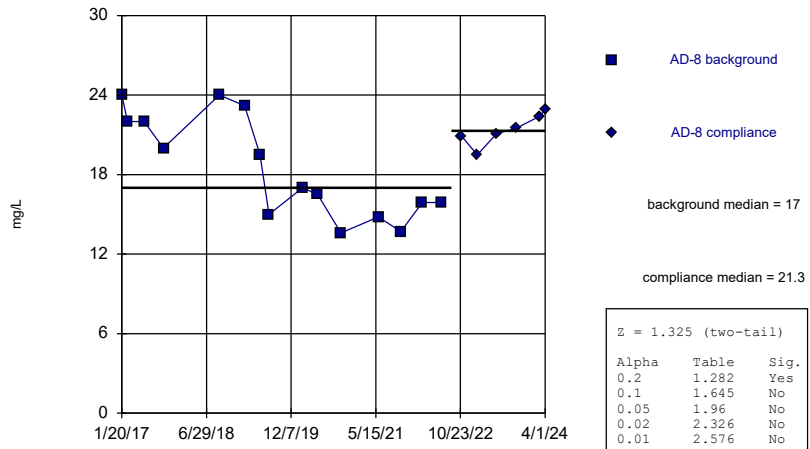
AD-5 (bg)



Constituent: Chloride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Mann-Whitney (Wilcoxon Rank Sum)

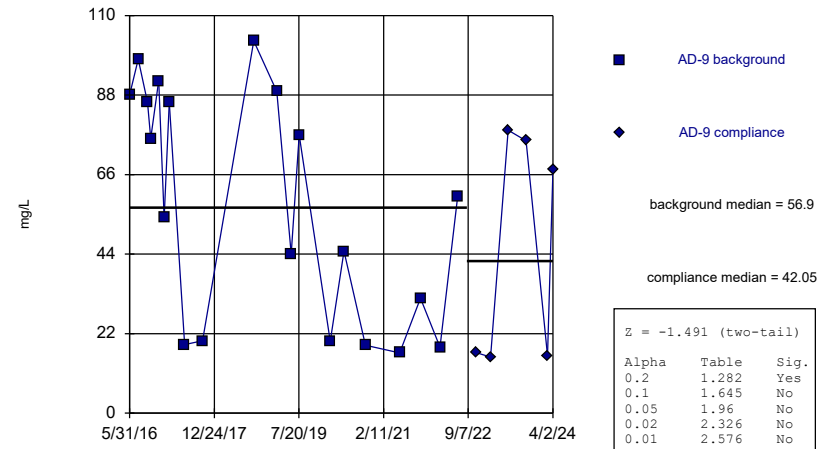
AD-8



Constituent: Chloride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

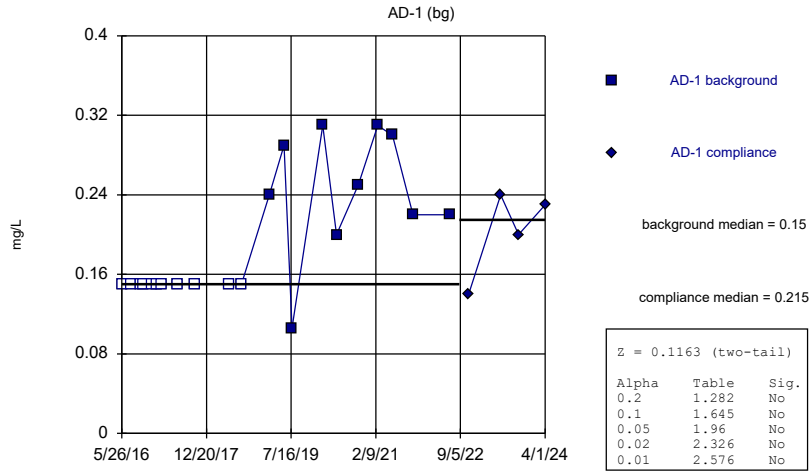
Mann-Whitney (Wilcoxon Rank Sum)

AD-9



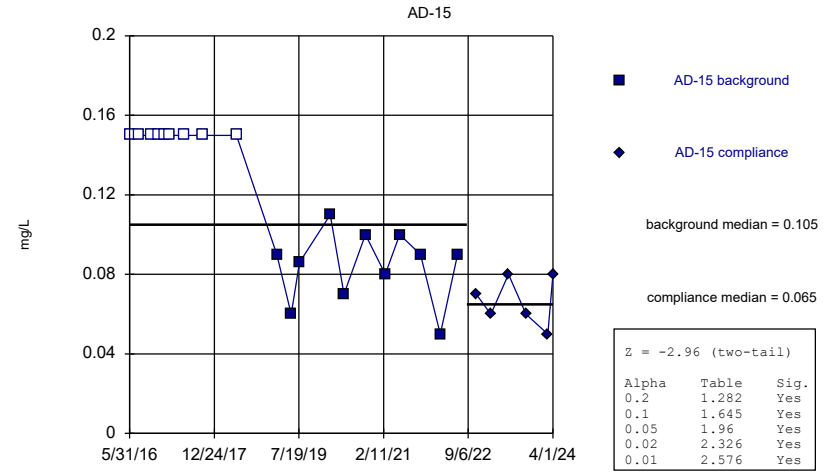
Constituent: Chloride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



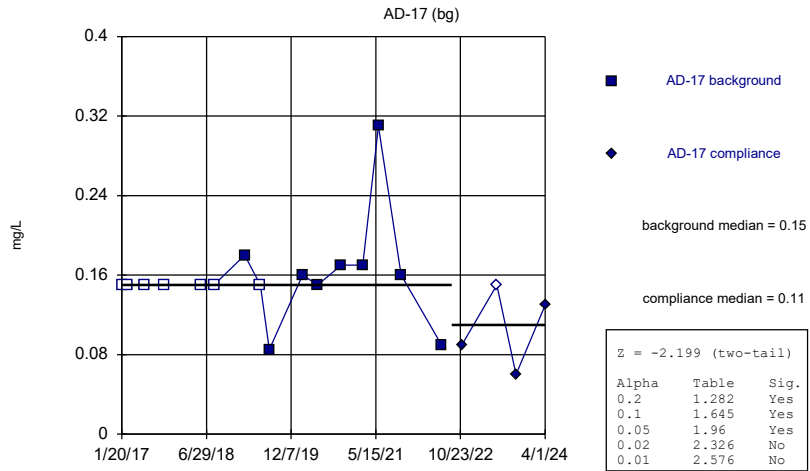
Constituent: Fluoride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



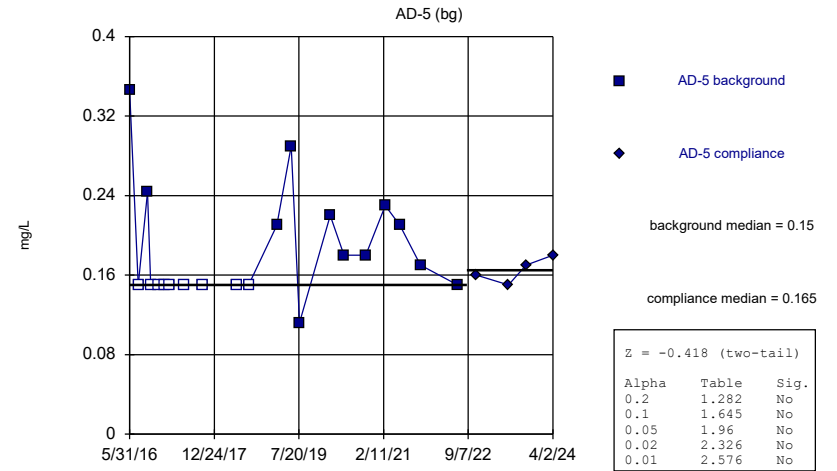
Constituent: Fluoride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



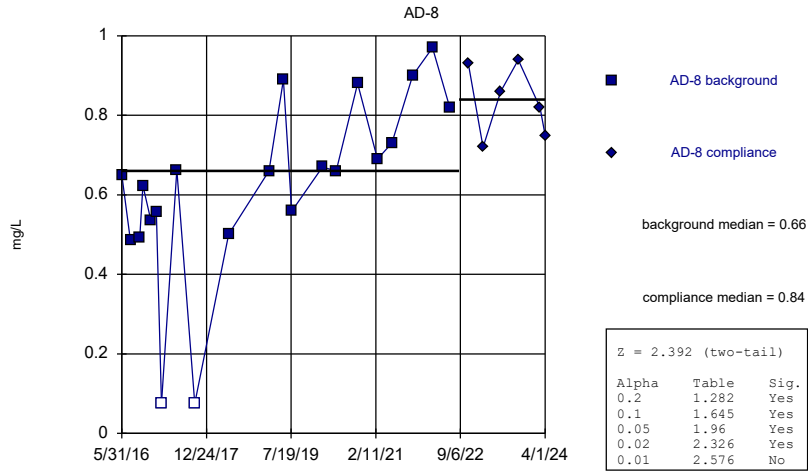
Constituent: Fluoride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



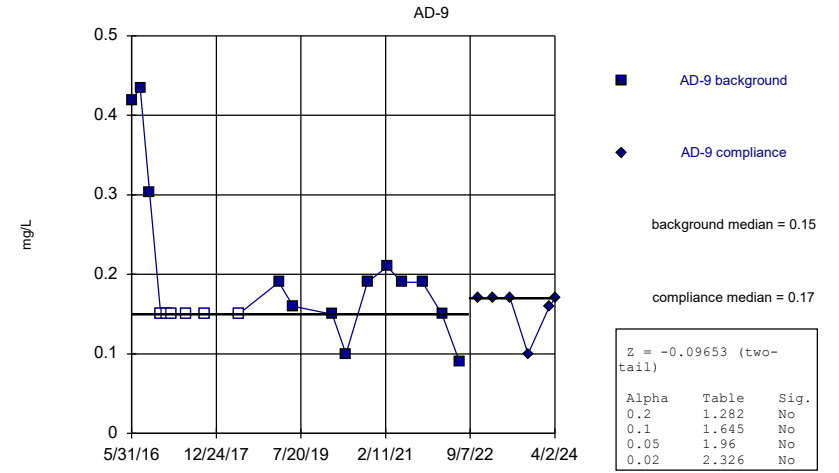
Constituent: Fluoride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



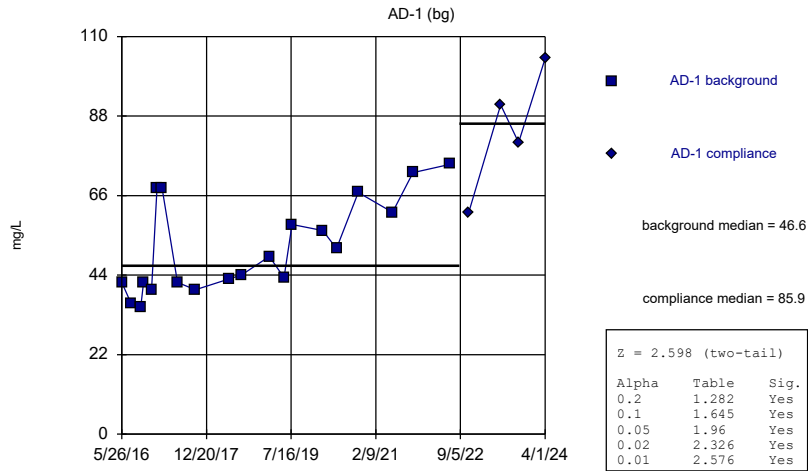
Constituent: Fluoride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



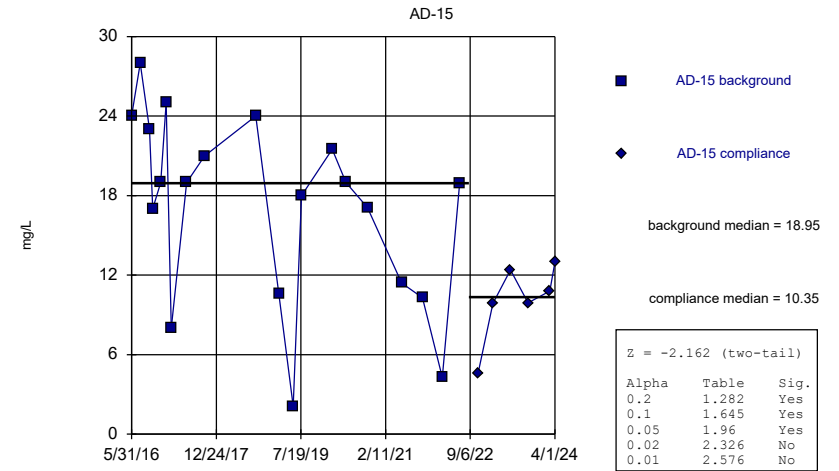
Constituent: Fluoride, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)



Constituent: Sulfate, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

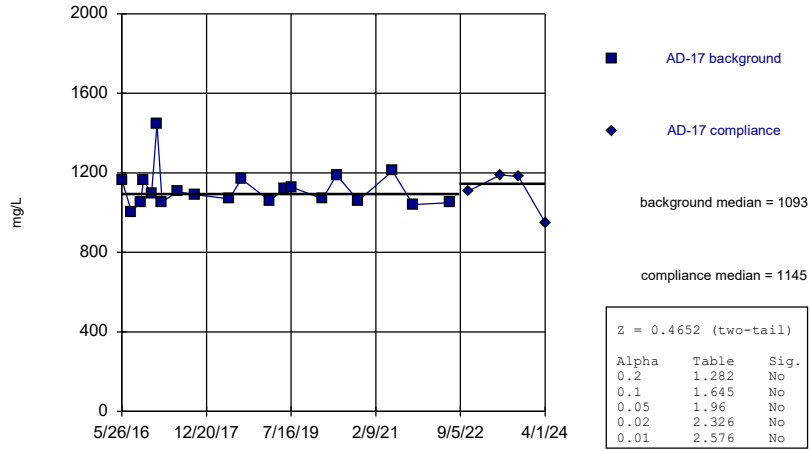
### Mann-Whitney (Wilcoxon Rank Sum)



Constituent: Sulfate, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

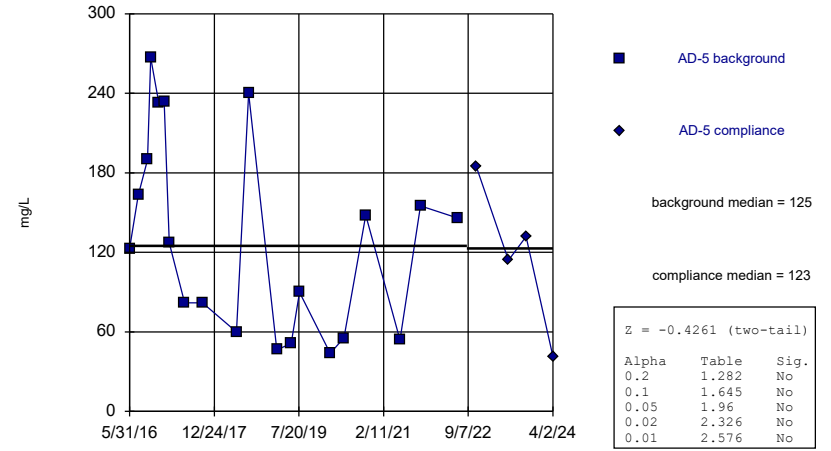
AD-17 (bg)



Constituent: Sulfate, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

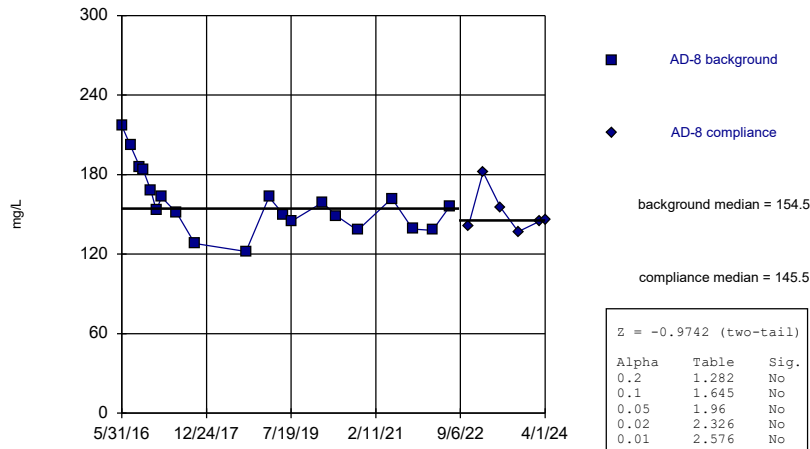
AD-5 (bg)



Constituent: Sulfate, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

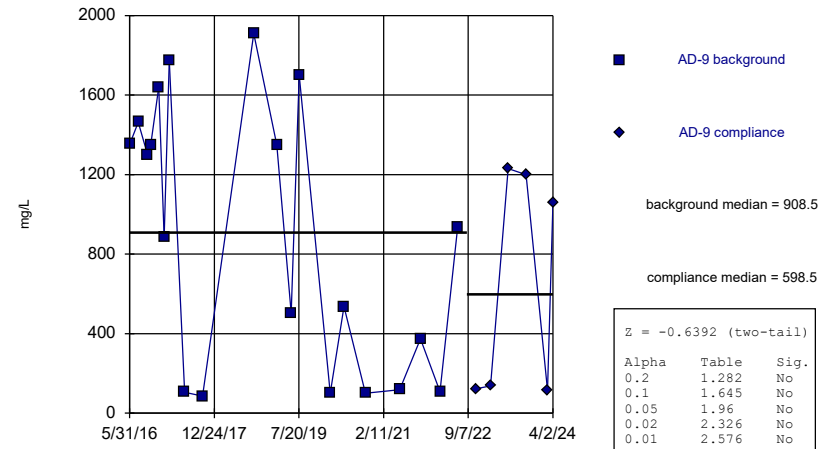
AD-8



Constituent: Sulfate, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

AD-9

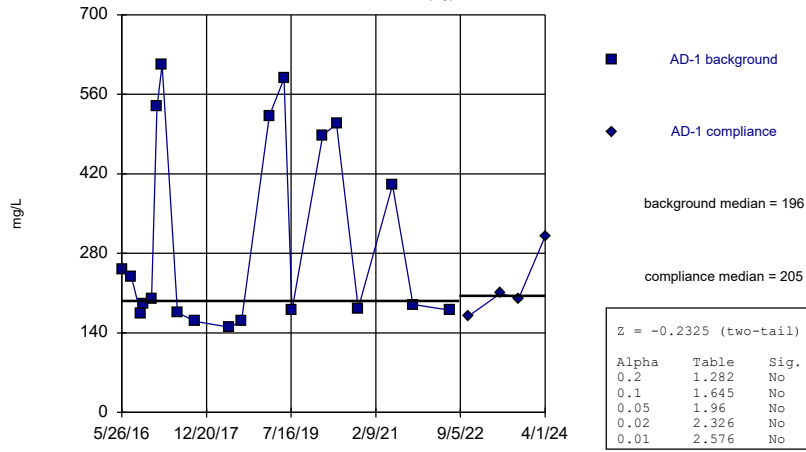


Constituent: Sulfate, total Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP



### Mann-Whitney (Wilcoxon Rank Sum)

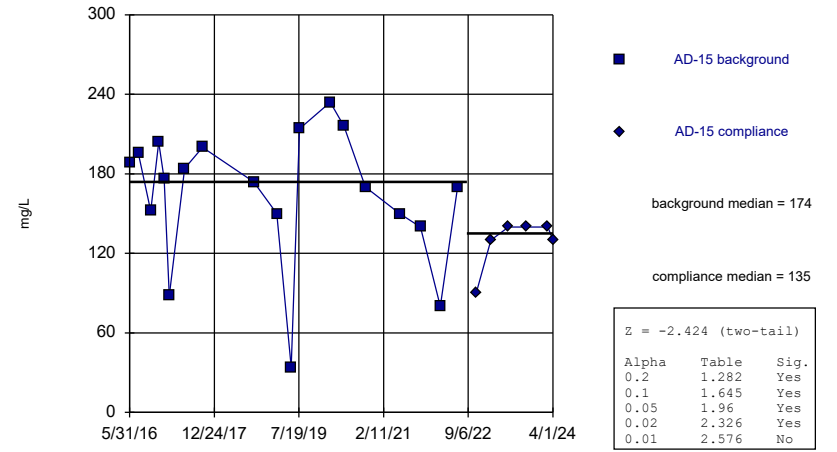
AD-1 (bg)



Constituent: Total Dissolved Solids Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

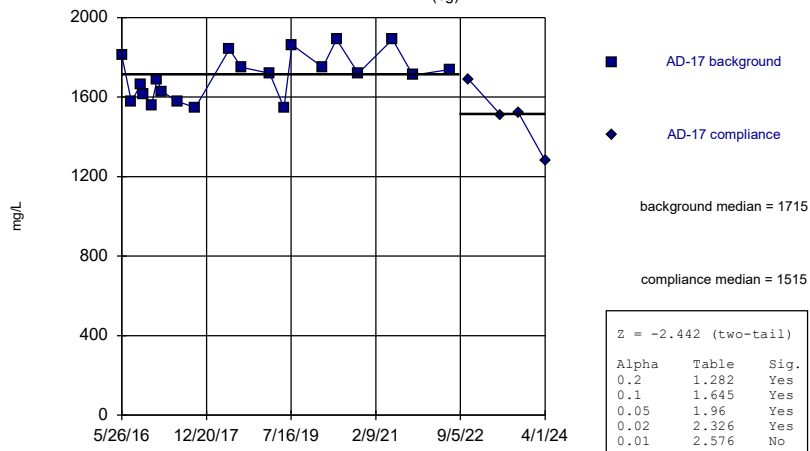
AD-15



Constituent: Total Dissolved Solids Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

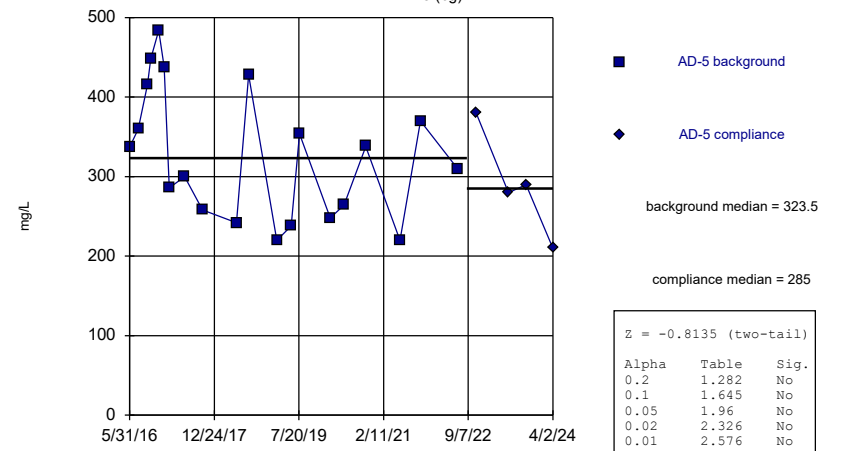
AD-17 (bg)



Constituent: Total Dissolved Solids Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

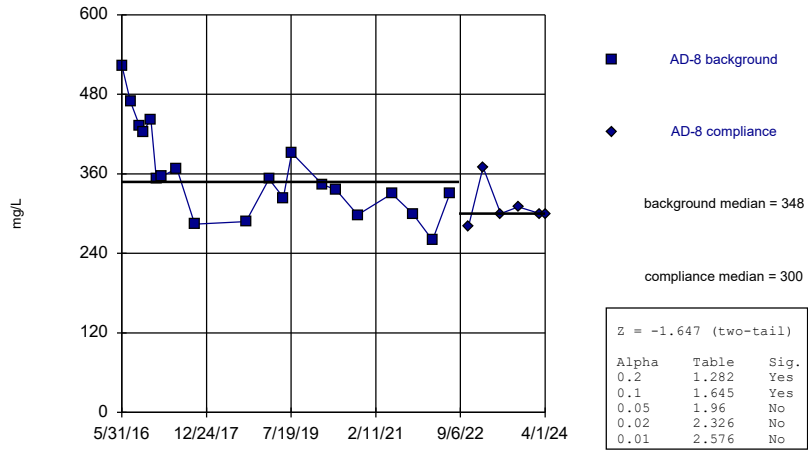
AD-5 (bg)



Constituent: Total Dissolved Solids Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

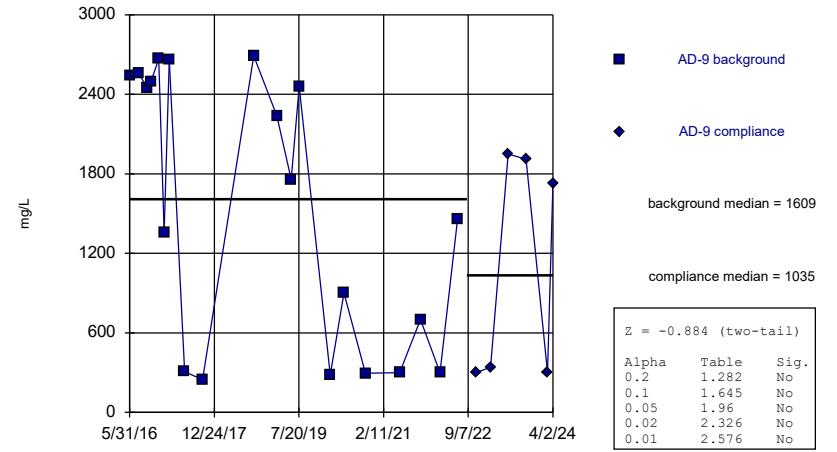
AD-8



Constituent: Total Dissolved Solids Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Mann-Whitney (Wilcoxon Rank Sum)

AD-9



Constituent: Total Dissolved Solids Analysis Run 11/15/2024 8:45 AM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

FIGURE E  
Intrawell PLs

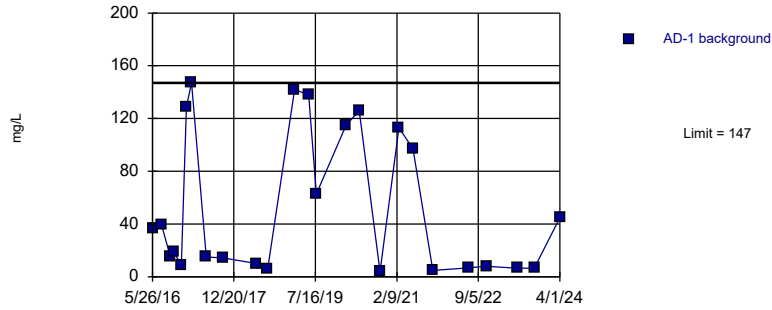
# Intrawell Prediction Limits

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:54 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Calcium, total (mg/L)	AD-1	147	n/a	1 future	n/a	25	n/a	n/a	0	n/a	n/a	0.002832	NP Intra (normality) 1 of 2
Calcium, total (mg/L)	AD-15	4.419	n/a	1 future	n/a	27	3.194	0.6729	0	None	No	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-17	233.4	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	1 future	n/a	25	37.48	7.852	0	None	No	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-8	27.3	n/a	1 future	n/a	28	4.392	0.459	0	None	sqrt(x)	0.002505	Param Intra 1 of 2
Calcium, total (mg/L)	AD-9	258	n/a	1 future	n/a	28	n/a	n/a	0	n/a	n/a	0.002337	NP Intra (normality) 1 of 2
Chloride, total (mg/L)	AD-1	6.459	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-15	35.53	n/a	1 future	n/a	26	28.68	3.749	0	None	No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-17	45.95	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	1 future	n/a	24	4.229	0.484	0	None	sqrt(x)	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-8	25.91	n/a	1 future	n/a	21	19.3	3.511	0	None	No	0.002505	Param Intra 1 of 2
Chloride, total (mg/L)	AD-9	103	n/a	1 future	n/a	26	n/a	n/a	0	n/a	n/a	0.002667	NP Intra (normality) 1 of 2
Fluoride, total (mg/L)	AD-1	0.31	n/a	1 future	n/a	25	n/a	n/a	44	n/a	n/a	0.002832	NP Intra (normality) 1 of 2
Fluoride, total (mg/L)	AD-15	0.15	n/a	1 future	n/a	26	n/a	n/a	34.62	n/a	n/a	0.002667	NP Intra (normality) 1 of 2
Fluoride, total (mg/L)	AD-17	0.31	n/a	1 future	n/a	20	n/a	n/a	40	n/a	n/a	0.004291	NP Intra (normality) 1 of 2
Fluoride, total (mg/L)	AD-5	0.3469	n/a	1 future	n/a	25	n/a	n/a	36	n/a	n/a	0.002832	NP Intra (normality) 1 of 2
Fluoride, total (mg/L)	AD-8	0.9812	n/a	1 future	n/a	27	0.4985	0.255	7.407	None	x^2	0.002505	Param Intra 1 of 2
Fluoride, total (mg/L)	AD-9	0.4339	n/a	1 future	n/a	25	n/a	n/a	24	n/a	n/a	0.002832	NP Intra (normality) 1 of 2
Sulfate, total (mg/L)	AD-1	90.85	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-15	28.23	n/a	1 future	n/a	26	15.45	6.991	0	None	No	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-17	1292	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	1 future	n/a	24	127.6	69.88	0	None	No	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-8	197.6	n/a	1 future	n/a	26	156.9	22.26	0	None	No	0.002505	Param Intra 1 of 2
Sulfate, total (mg/L)	AD-9	1910	n/a	1 future	n/a	26	n/a	n/a	0	n/a	n/a	0.002667	NP Intra (normality) 1 of 2
Total Dissolved Solids (mg/L)	AD-1	612	n/a	1 future	n/a	24	n/a	n/a	0	n/a	n/a	0.003124	NP Intra (normality) 1 of 2
Total Dissolved Solids (mg/L)	AD-15	242.5	n/a	1 future	n/a	25	155.6	47.4	0	None	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-17	1935	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	1 future	n/a	24	321.6	80.41	0	None	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-8	467	n/a	1 future	n/a	26	348.7	64.75	0	None	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	AD-9	2690	n/a	1 future	n/a	26	n/a	n/a	0	n/a	n/a	0.002667	NP Intra (normality) 1 of 2

### Prediction Limit

Intrawell Non-parametric, AD-1 (bg)

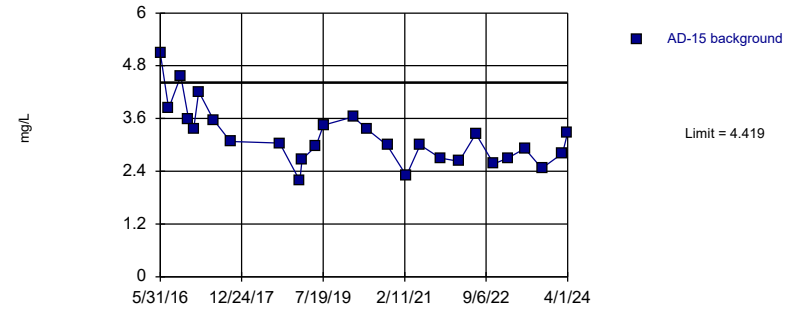


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 25 background values. Well-constituent pair annual alpha = 0.005656. Individual comparison alpha = 0.002832 (1 of 2). Assumes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

Constituent: Calcium, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Prediction Limit

Intrawell Parametric, AD-15

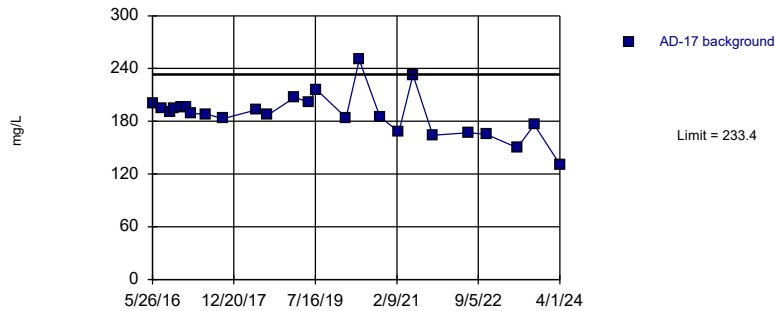


Background Data Summary: Mean=3.194, Std. Dev.=0.6729, n=27. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9317, critical = 0.894. Kappa = 1.82 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

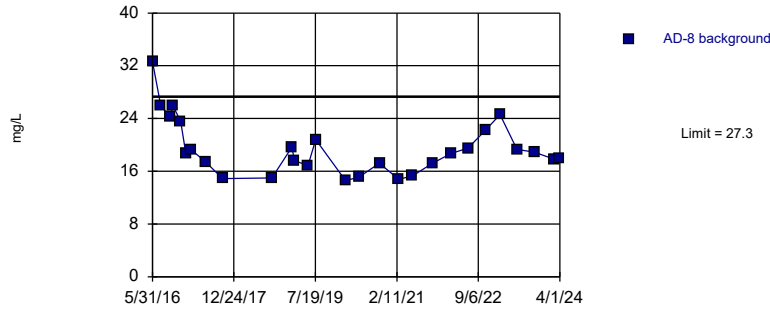
Constituent: Calcium, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Prediction Limit

Intrawell Parametric, AD-17 (bg)



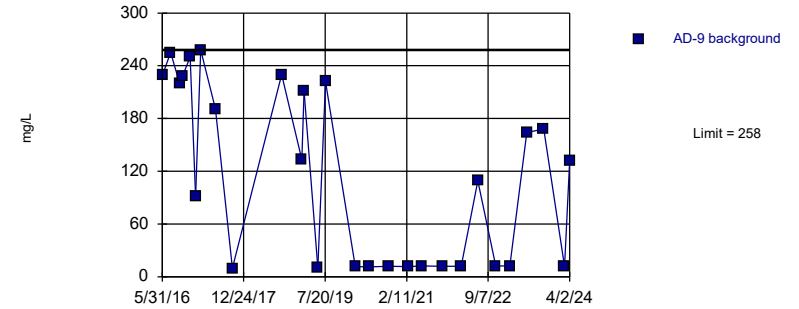
Prediction Limit  
Intrawell Parametric, AD-8



Background Data Summary (based on square root transformation): Mean=4.392, Std. Dev.=0.459, n=28. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9118, 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 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

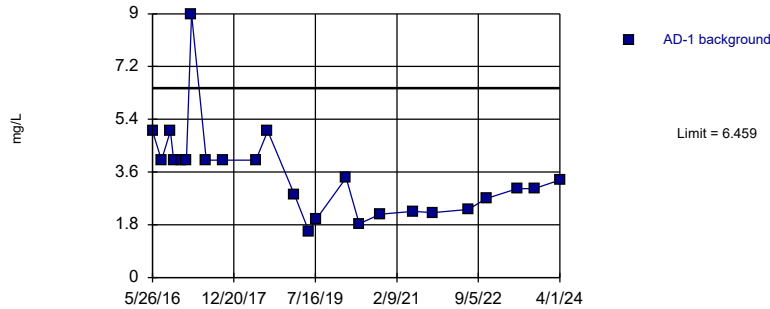
Prediction Limit  
Intrawell Non-parametric, AD-9



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 28 background values. Well-constituent pair annual alpha = 0.004669. Individual comparison alpha = 0.002337 (1 of 2). Assumes 1 future value.

Constituent: Calcium, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

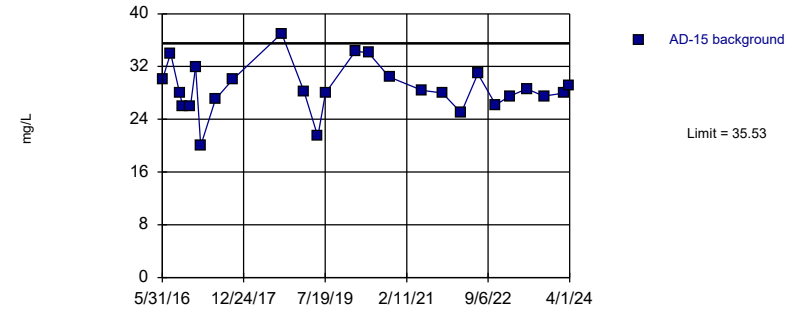
Prediction Limit  
Intrawell Parametric, AD-1 (bg)



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 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

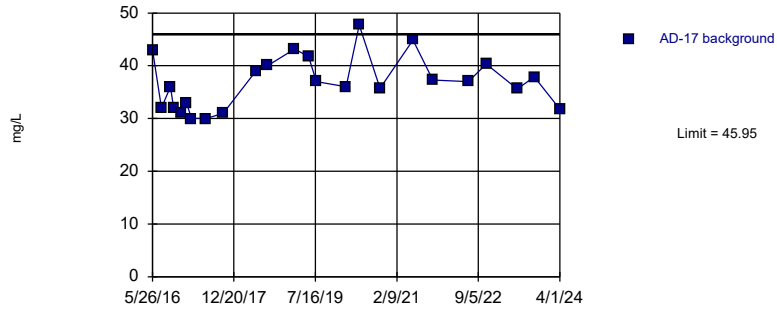
Prediction Limit  
Intrawell Parametric, AD-15



Background Data Summary: Mean=28.68, Std. Dev.=3.749, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9575, 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 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

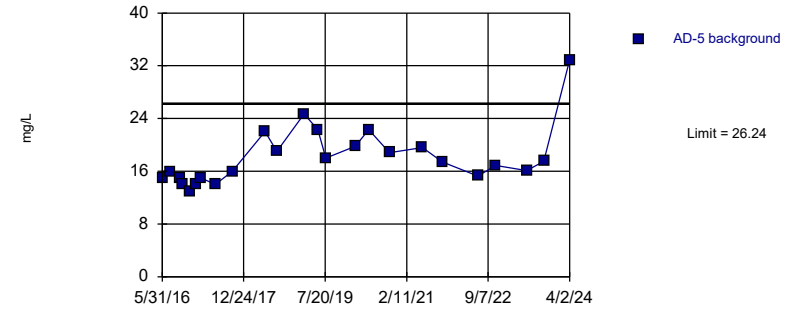
Prediction Limit  
Intrawell Parametric, AD-17 (bg)



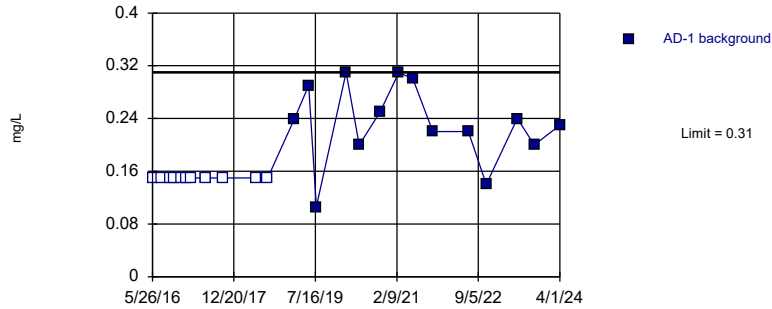
Background Data Summary: Mean=36.8, Std. Dev.=4.96, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9512, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit  
Intrawell Parametric, AD-5 (bg)



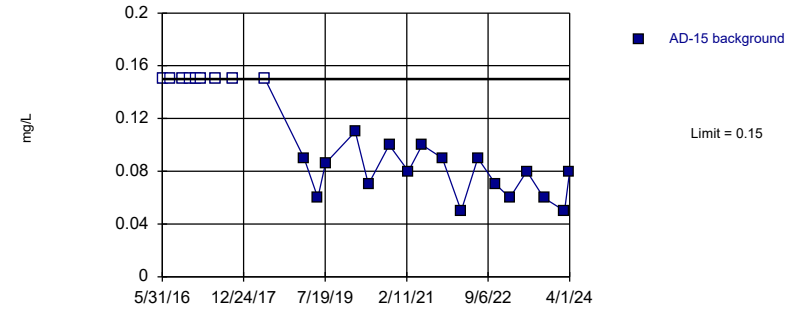
Prediction Limit  
Intrawell Non-parametric, AD-1 (bg)



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. 44% NDs. Well-constituent pair annual alpha = 0.005656. Individual comparison alpha = 0.002832 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

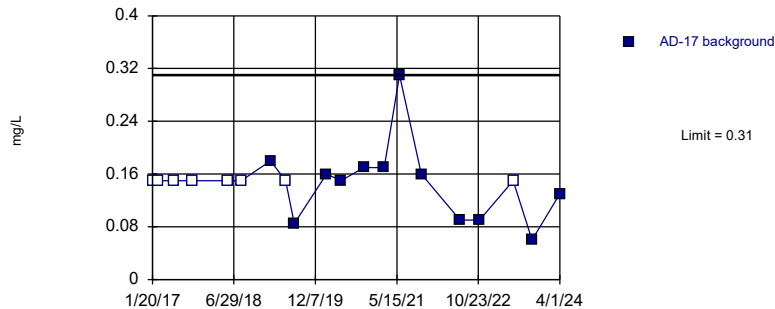
Prediction Limit  
Intrawell Non-parametric, AD-15



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. 34.62% NDs. Well-constituent pair annual alpha = 0.005327. Individual comparison alpha = 0.002667 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

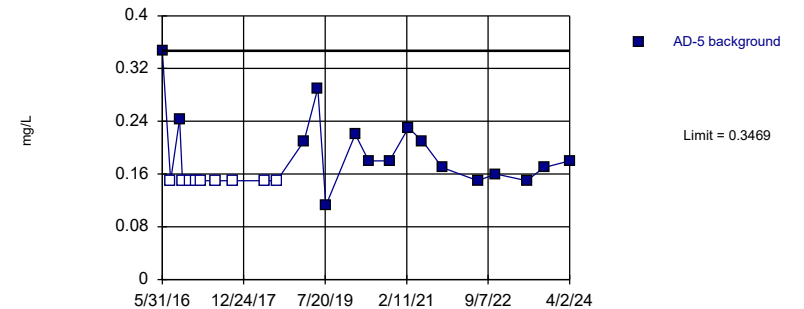
Prediction Limit  
Intrawell Non-parametric, AD-17 (bg)



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 20 background values. 40% NDs. Well-constituent pair annual alpha = 0.008564. Individual comparison alpha = 0.004291 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit  
Intrawell Non-parametric, AD-5 (bg)

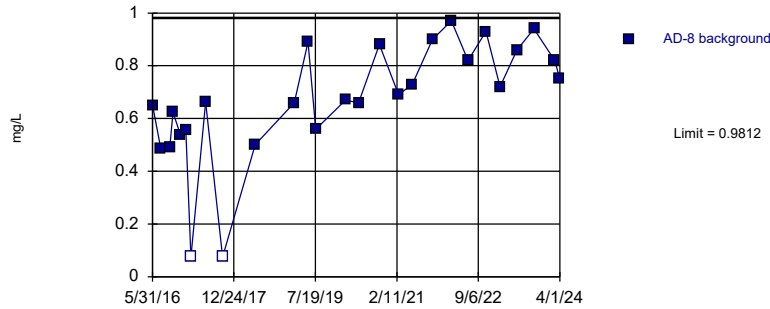


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 25 background values. 36% NDs. Well-constituent pair annual alpha = 0.005656. Individual comparison alpha = 0.002832 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



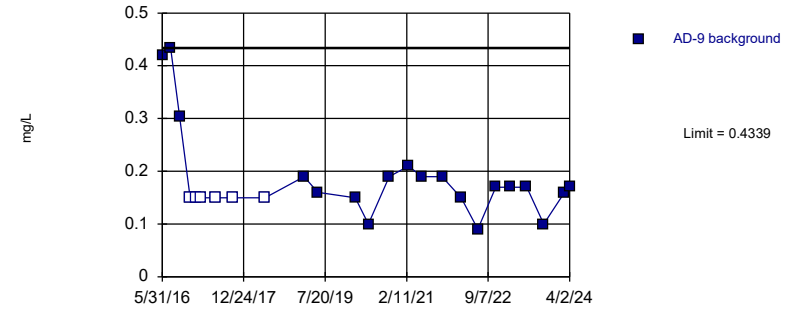
Prediction Limit  
Intrawell Parametric, AD-8



Background Data Summary (based on square transformation): Mean=0.4985, Std. Dev.=0.255, n=27, 7.407% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9616, 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: Fluoride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

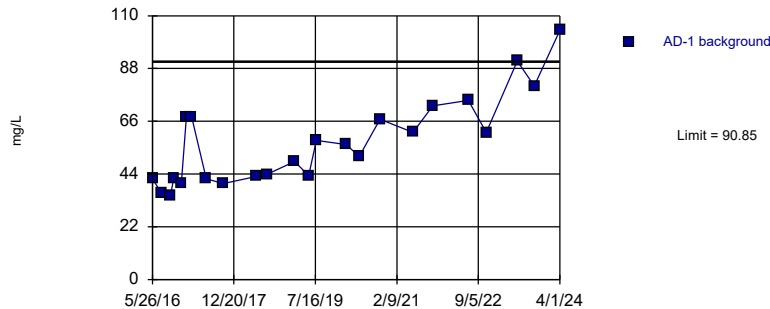
Prediction Limit  
Intrawell Non-parametric, AD-9



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. 24% NDs. Well-constituent pair annual alpha = 0.005656. Individual comparison alpha = 0.002832 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

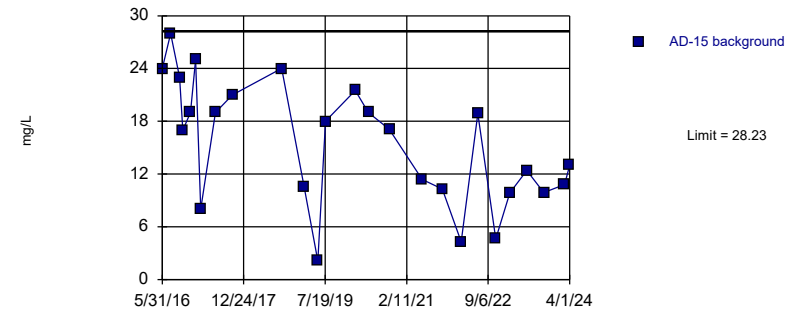
Prediction Limit  
Intrawell Parametric, AD-1 (bg)



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 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

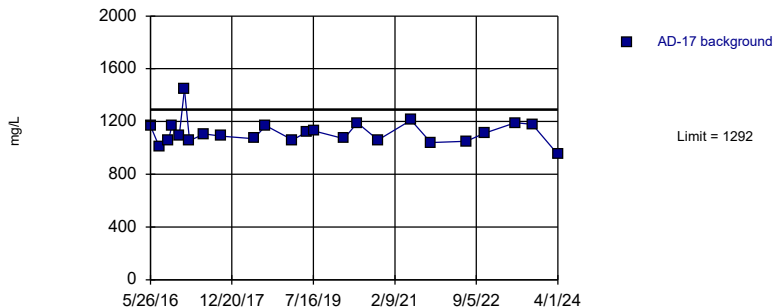
Prediction Limit  
Intrawell Parametric, AD-15



Background Data Summary: Mean=15.45, Std. Dev.=6.991, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9629, 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: Sulfate, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

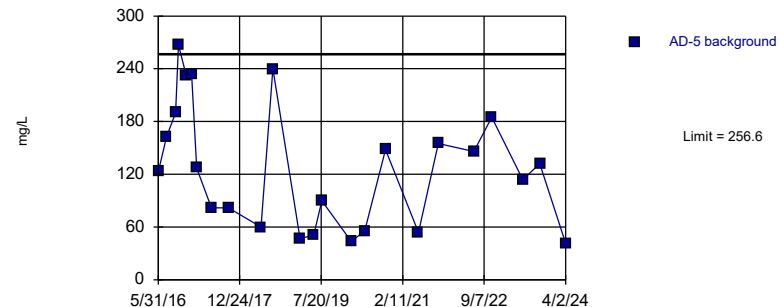
Prediction Limit  
Intrawell Parametric, AD-17 (bg)



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.

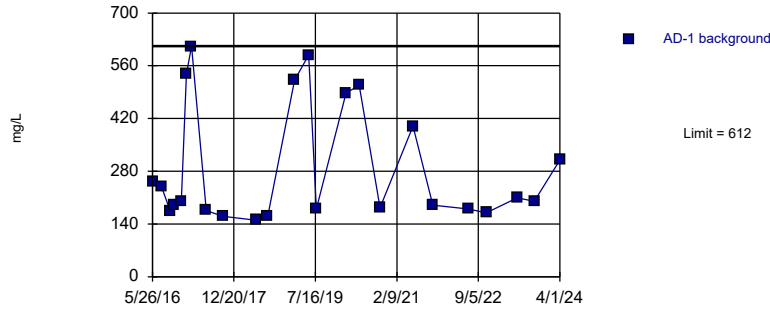
Constituent: Sulfate, total Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit  
Intrawell Parametric, AD-5 (bg)



Prediction Limit

Intrawell Non-parametric, AD-1 (bg)

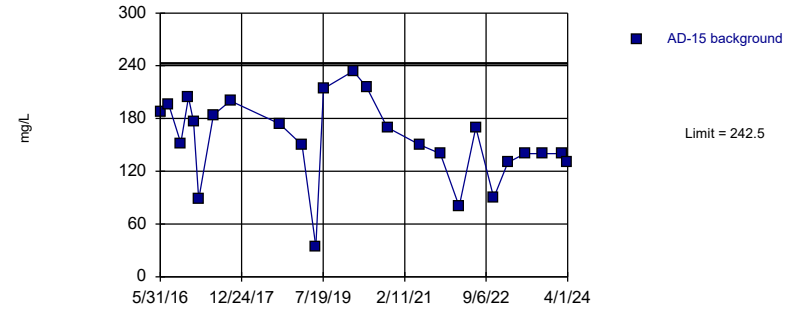


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 24 background values. Well-constituent pair annual alpha = 0.006238. Individual comparison alpha = 0.003124 (1 of 2). Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit

Intrawell Parametric, AD-15

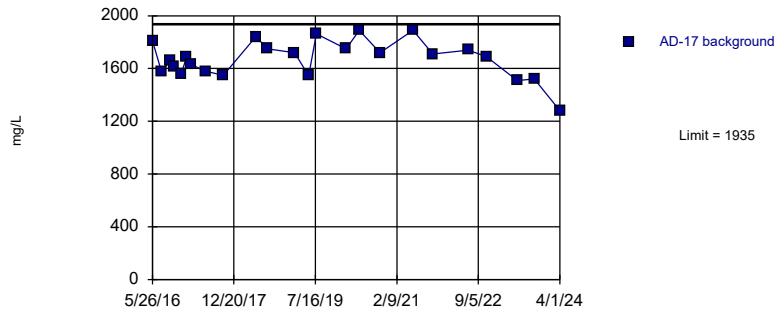


Background Data Summary: Mean=155.6, Std. Dev.=47.4, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9573, critical = 0.888. Kappa = 1.834 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit

Intrawell Parametric, AD-17 (bg)

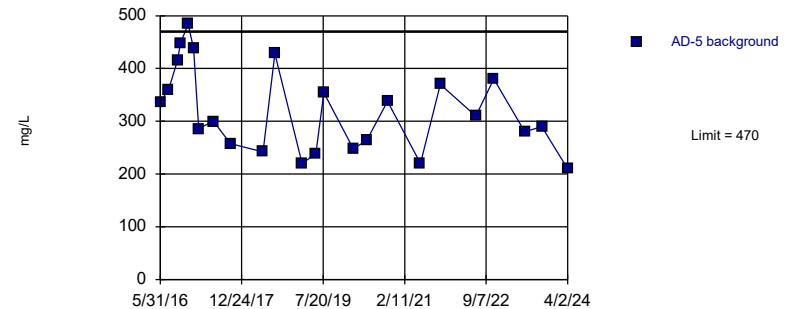


Background Data Summary: Mean=1670, Std. Dev.=143.4, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9531, critical = 0.884. Kappa = 1.846 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit

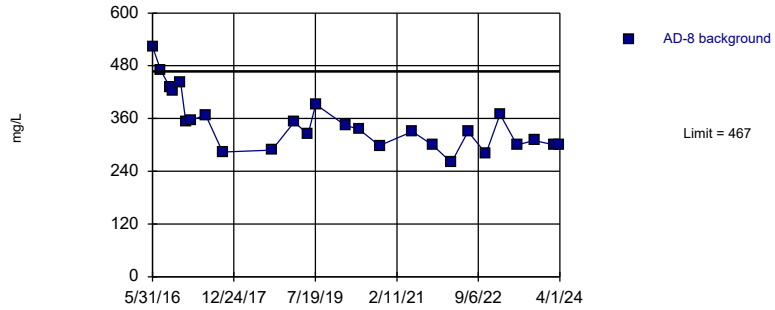
Intrawell Parametric, AD-5 (bg)



Background Data Summary: Mean=321.6, Std. Dev.=80.41, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9464, 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: Total Dissolved Solids Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

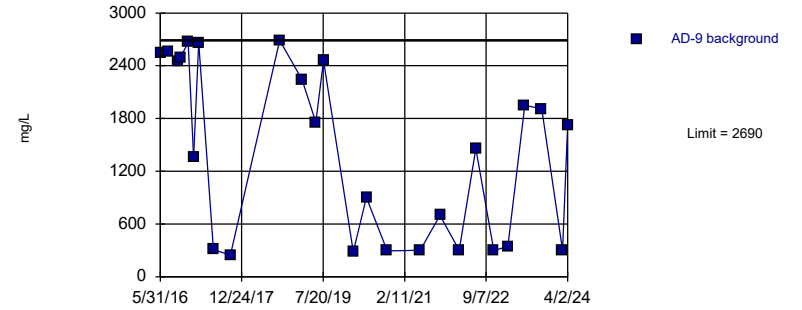
Prediction Limit  
Intrawell Parametric, AD-8



Background Data Summary: Mean=348.7, Std. Dev.=64.75, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9081, 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 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit  
Intrawell Non-parametric, AD-9



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: Total Dissolved Solids Analysis Run 11/13/2024 1:52 PM View: Intrawell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

## FIGURE F

Upgradient Trend Tests – Appendix III

# Appendix III Trend Tests - Upgradient Wells - Significant Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:44 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>Xform</u>	<u>Alpha</u>	<u>Method</u>
Boron, total (mg/L)	AD-1 (bg)	0.06405	201	118	Yes	26	0	n/a	n/a	0.01	NP
pH, field (SU)	AD-17 (bg)	-0.09393	-164	-118	Yes	26	0	n/a	n/a	0.01	NP

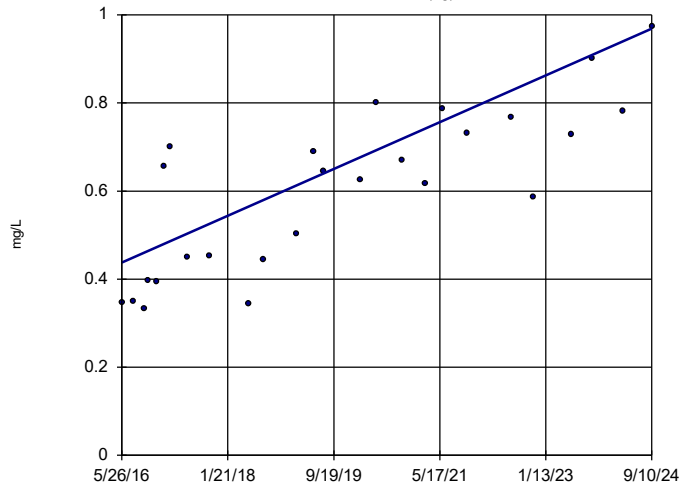
# Appendix III Trend Tests - Upgradient Wells - All Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:44 PM

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

### Sen's Slope Estimator

AD-1 (bg)

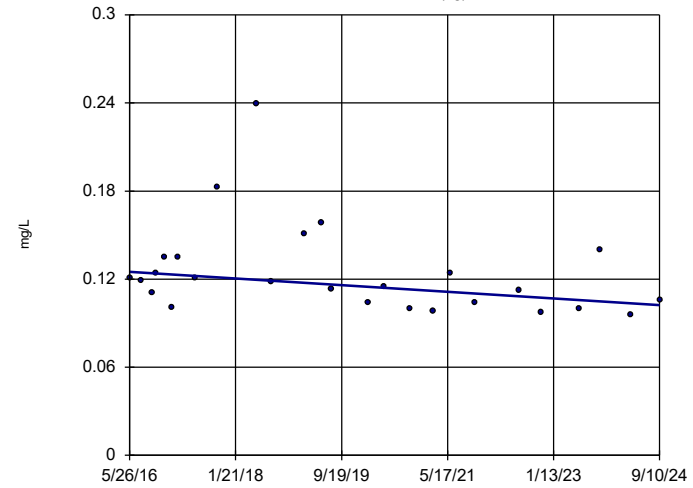


n = 26  
 Slope = 0.06405  
 units per year.  
 Mann-Kendall  
 statistic = 201  
 critical = 118  
 Increasing trend  
 significant at 99%  
 confidence level  
 ( $\alpha = 0.005$  per  
 tail).

Constituent: Boron, total Analysis Run 11/13/2024 1:42 PM View: Upgradient Well Trend Test  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Sen's Slope Estimator

AD-17 (bg)

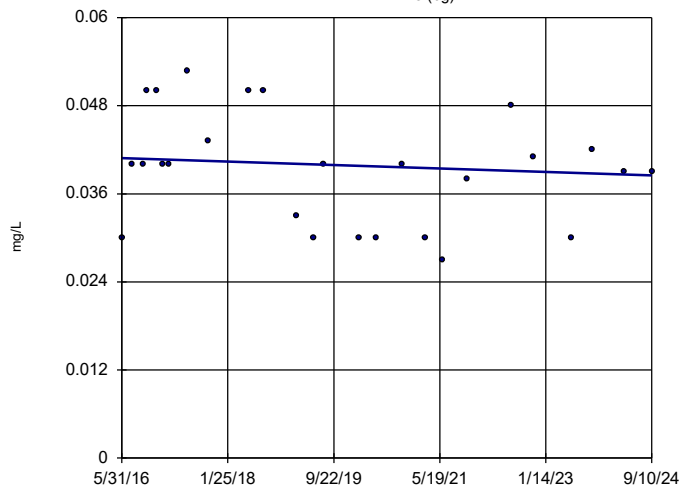


n = 26  
 Slope = -0.002722  
 units per year.  
 Mann-Kendall  
 statistic = -102  
 critical = -118  
 Trend not sig-  
 nificant at 99%  
 confidence level  
 ( $\alpha = 0.005$  per  
 tail).

Constituent: Boron, total Analysis Run 11/13/2024 1:42 PM View: Upgradient Well Trend Test  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Sen's Slope Estimator

AD-5 (bg)

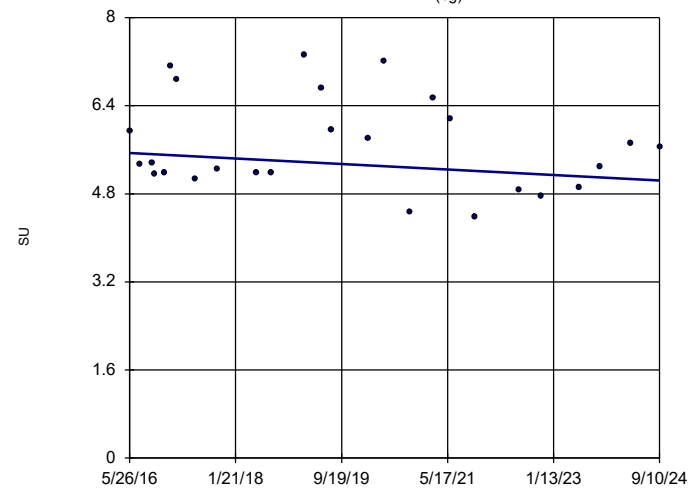


n = 26  
 Slope = -0.0002883  
 units per year.  
 Mann-Kendall  
 statistic = -59  
 critical = -118  
 Trend not sig-  
 nificant at 99%  
 confidence level  
 ( $\alpha = 0.005$  per  
 tail).

Constituent: Boron, total Analysis Run 11/13/2024 1:42 PM View: Upgradient Well Trend Test  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Sen's Slope Estimator

AD-1 (bg)



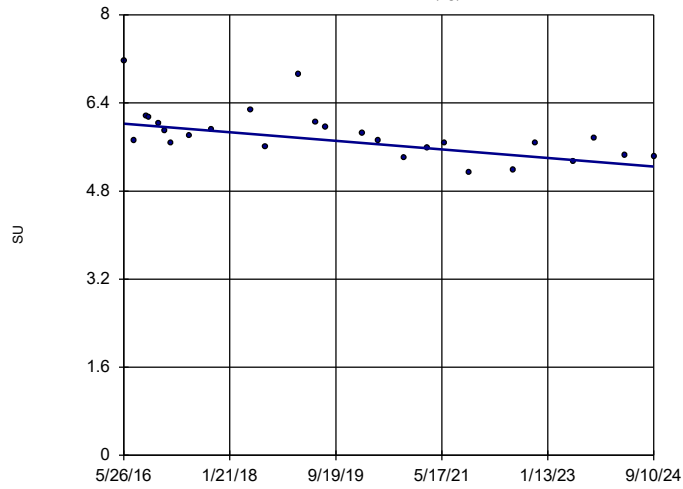
n = 26  
 Slope = -0.06035  
 units per year.  
 Mann-Kendall  
 statistic = -40  
 critical = -118  
 Trend not sig-  
 nificant at 99%  
 confidence level  
 ( $\alpha = 0.005$  per  
 tail).

Constituent: pH, field Analysis Run 11/13/2024 1:42 PM View: Upgradient Well Trend Test  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP



### Sen's Slope Estimator

AD-17 (bg)

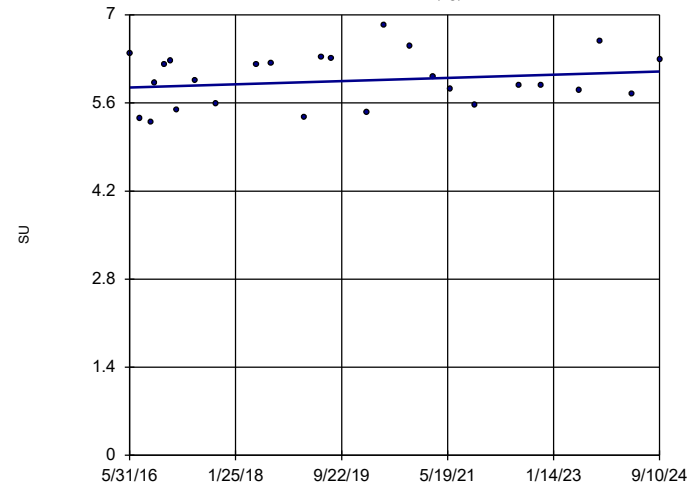


n = 26  
Slope = -0.09393  
units per year.  
Mann-Kendall  
statistic = -164  
critical = -118  
Decreasing trend  
significant at 99%  
confidence level  
( $\alpha = 0.005$  per  
tail).

Constituent: pH, field Analysis Run 11/13/2024 1:42 PM View: Upgradient Well Trend Test  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/13/2024 1:42 PM View: Upgradient Well Trend Test  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

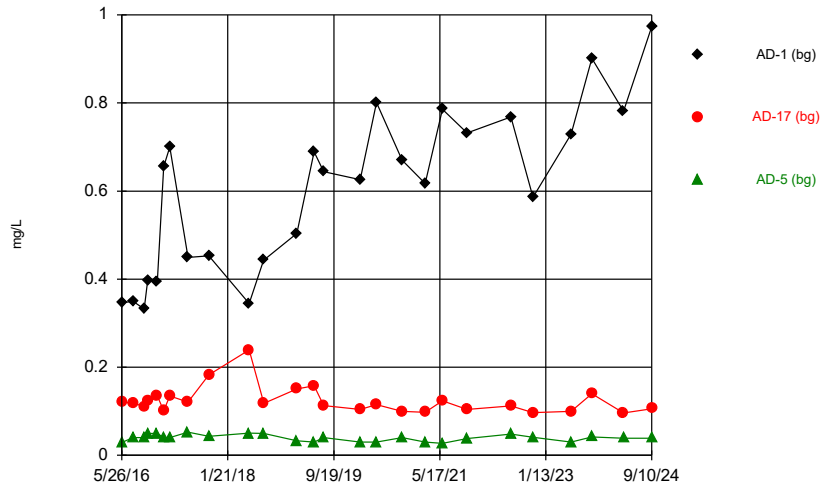
FIGURE G  
Interwell PLs

# Interwell Prediction Limits

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 12/10/2024, 3:07 PM

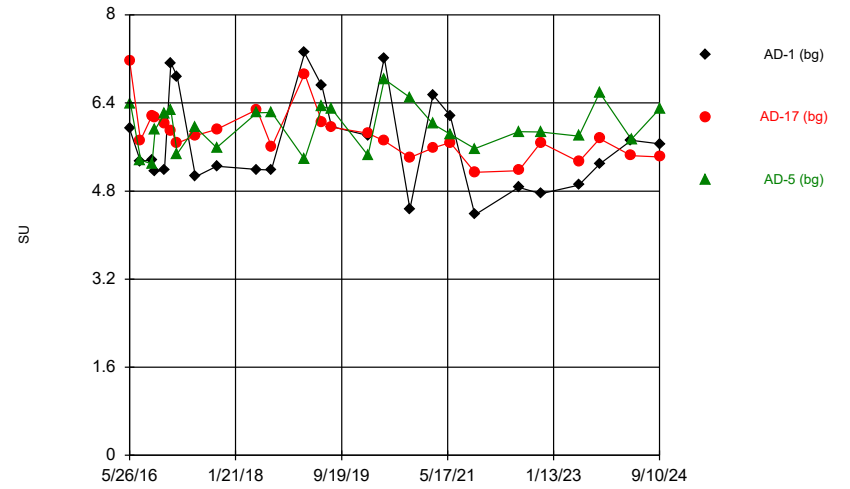
<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg</u>	<u>NBg</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron, total (mg/L)	n/a	0.973	n/a	n/a	3 future	n/a	78	n/a	n/a	n/a	0	n/a	n/a	0.0003178	NP Inter (normality) 1 of 2
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	

### Time Series



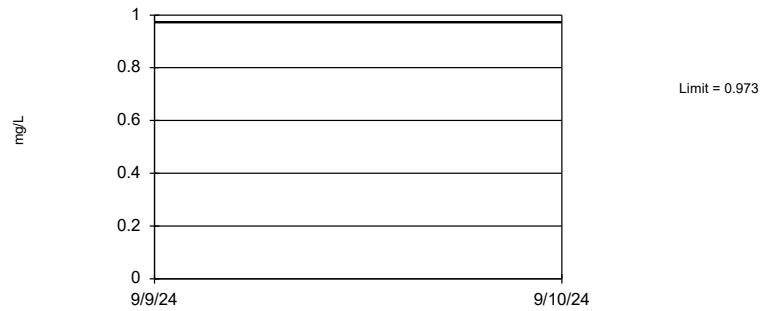
Constituent: Boron, total Analysis Run 12/10/2024 3:06 PM View: Interwell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Time Series



Constituent: pH, field Analysis Run 12/10/2024 3:06 PM View: Interwell  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

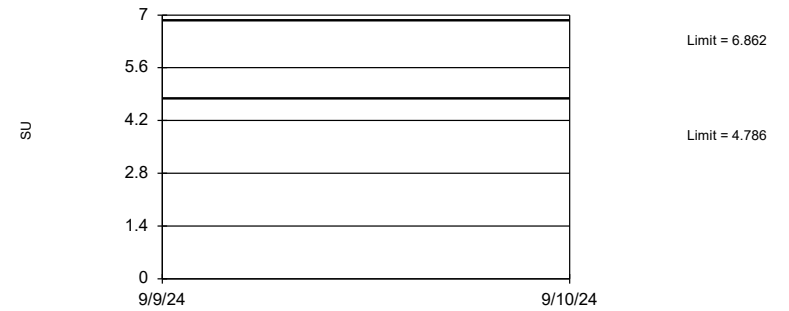
### Prediction Limit Interwell Non-parametric



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 12/10/2024 3:06 PM View: Interwell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 12/10/2024 3:06 PM View: Interwell  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

## FIGURE H

Upgradient Trend Tests – Appendix IV

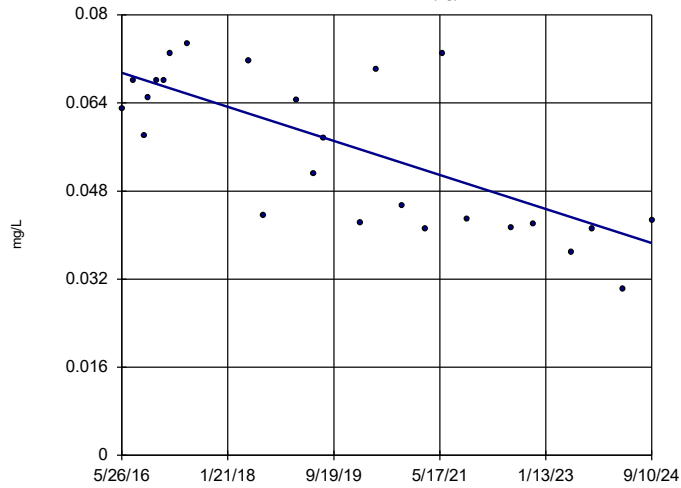
# Appendix IV Trend Tests - Upgradient Wells - All/Significant Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/15/2024, 1:57 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)

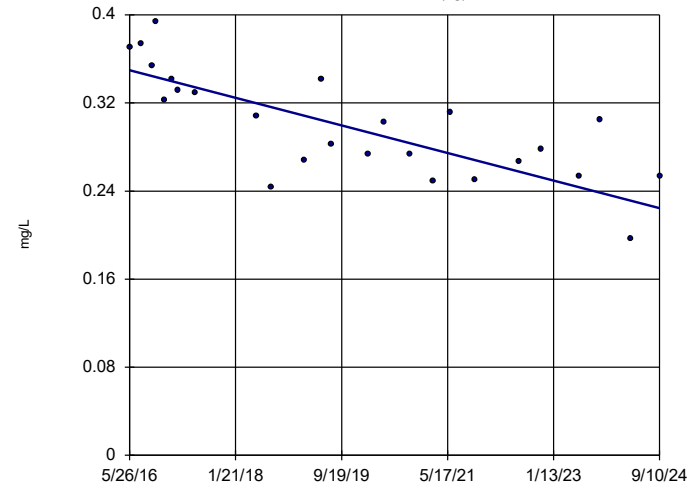


n = 25  
 Slope = -0.003727  
 units per year.  
 Mann-Kendall  
 statistic = -145  
 critical = -85  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Constituent: Cobalt, total Analysis Run 11/15/2024 1:57 PM View: Upgradient Wells Trend Tests - Appen  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Sen's Slope Estimator

AD-17 (bg)

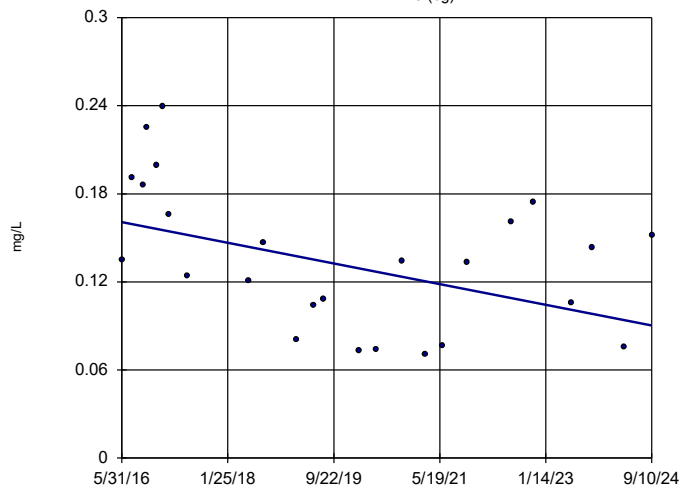


n = 25  
 Slope = -0.01509  
 units per year.  
 Mann-Kendall  
 statistic = -170  
 critical = -85  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Constituent: Lithium, total Analysis Run 11/15/2024 1:57 PM View: Upgradient Wells Trend Tests - Appen  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/15/2024 1:57 PM View: Upgradient Wells Trend Tests - Appen  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP



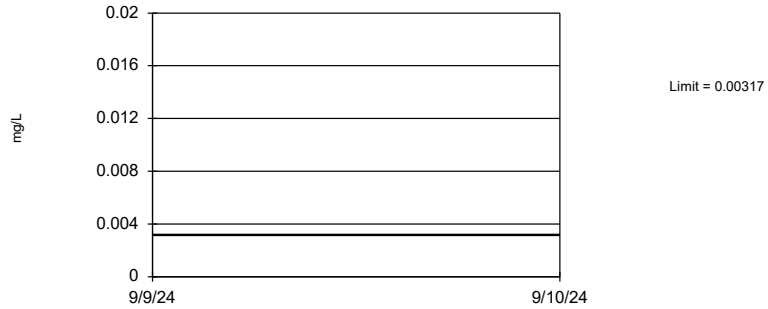
FIGURE I  
UTLs

# Upper Tolerance Limits

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/17/2024, 2:19 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)

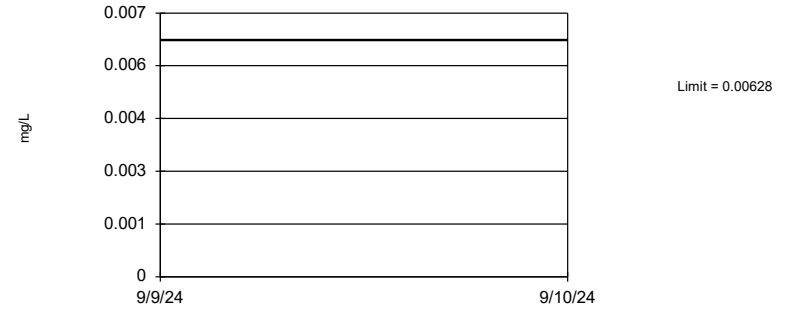
Tolerance Limit  
Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

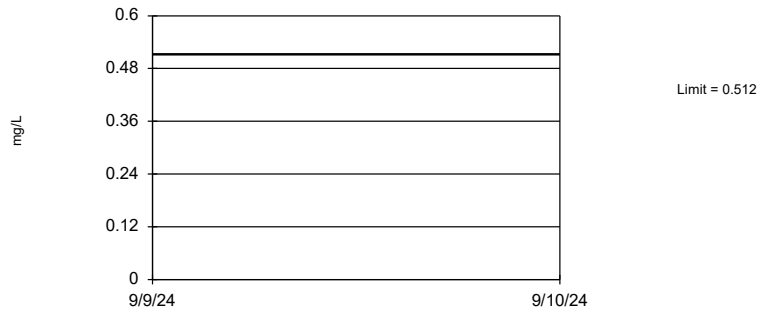
Tolerance Limit  
Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

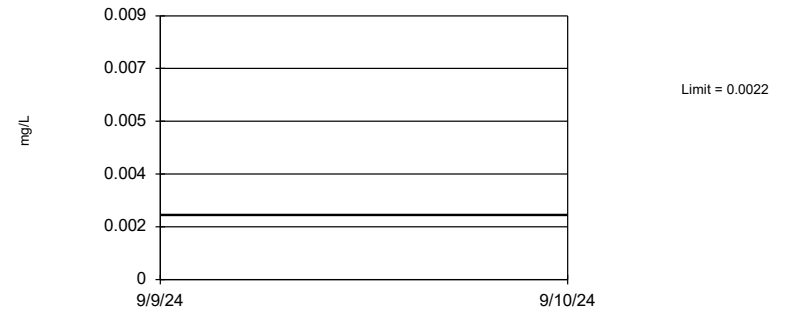
Tolerance Limit  
Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

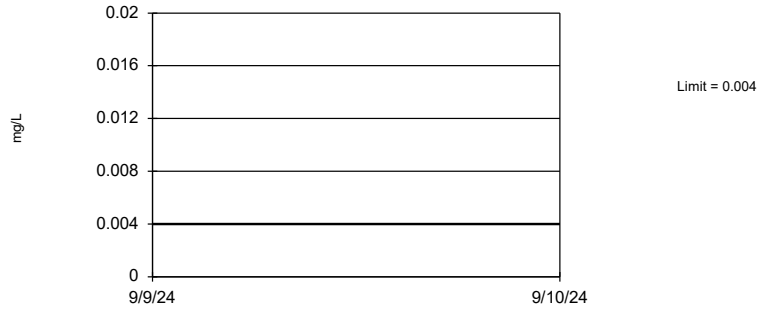
Tolerance Limit  
Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

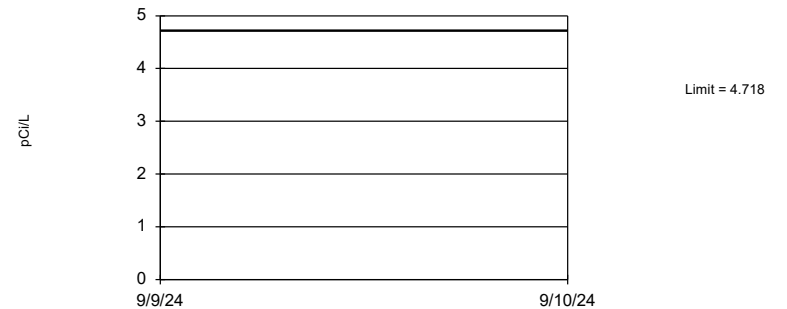
Tolerance Limit  
Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

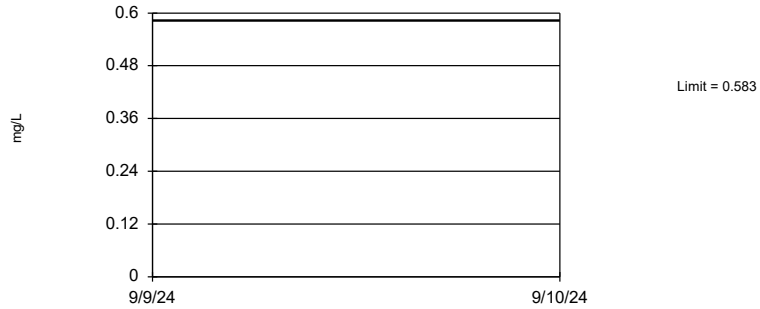
Tolerance Limit  
Interwell Parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

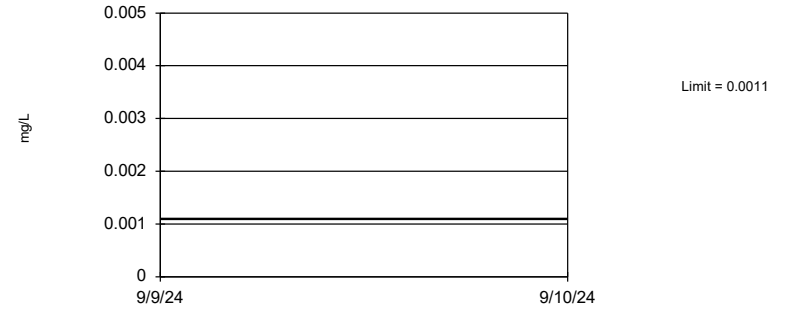
### Tolerance Limit Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

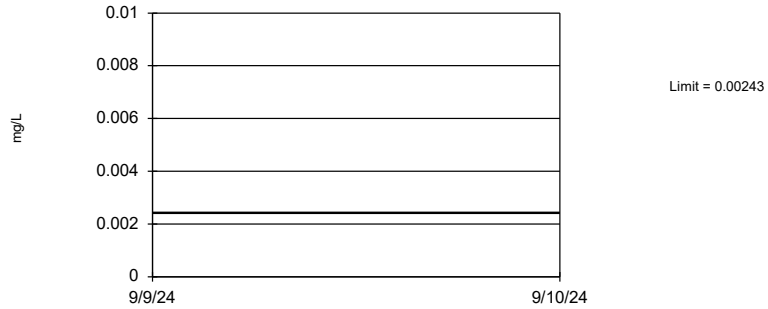
### Tolerance Limit Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

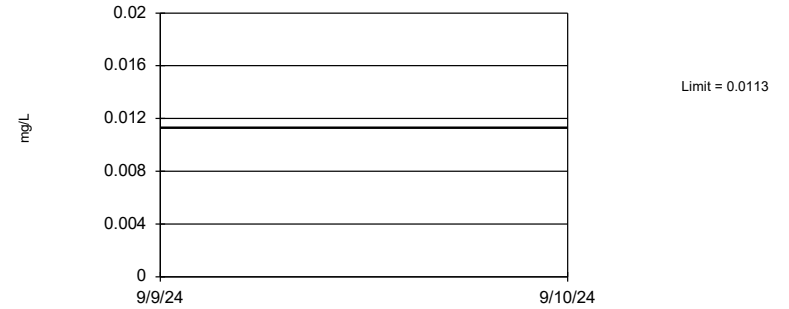
### Tolerance Limit Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

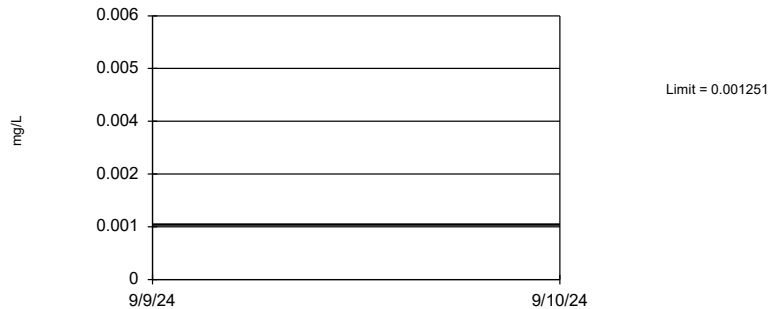
### Tolerance Limit Interwell Non-parametric



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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/17/2024 2:18 PM View: UTLs  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

FIGURE J  
GWPS

<b>WELSH PBAP GWPS</b>			
<b>Constituent Name</b>	<b>MCL</b>	<b>Background Limit</b>	<b>GWPS</b>
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	0.39	0.39
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

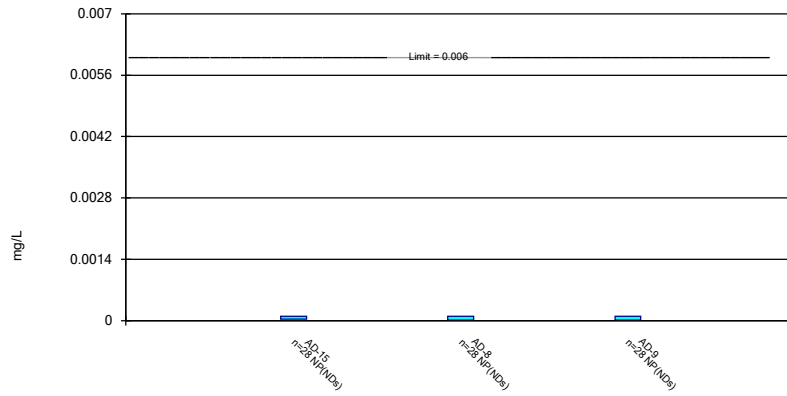
# Confidence Interval - All Results (No Significant)

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 11/13/2024, 1:58 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Antimony, total (mg/L)	AD-15	0.0001	0.00003	0.006	No	28	60.71	No	0.01	NP (NDs)
Antimony, total (mg/L)	AD-8	0.0001	0.000012	0.006	No	28	75	No	0.01	NP (NDs)
Antimony, total (mg/L)	AD-9	0.0001	0.00001	0.006	No	28	85.71	No	0.01	NP (NDs)
Arsenic, total (mg/L)	AD-15	0.005938	0.00307	0.01	No	27	0	ln(x)	0.01	Param.
Arsenic, total (mg/L)	AD-8	0.001063	0.00025	0.01	No	28	28.57	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-9	0.00168	0.0003	0.01	No	28	32.14	No	0.01	NP (normality)
Barium, total (mg/L)	AD-15	0.153	0.0753	2	No	27	0	No	0.01	NP (normality)
Barium, total (mg/L)	AD-8	0.02934	0.02374	2	No	28	0	sqrt(x)	0.01	Param.
Barium, total (mg/L)	AD-9	0.0516	0.033	2	No	28	0	No	0.01	NP (normality)
Beryllium, total (mg/L)	AD-15	0.0004226	0.0001603	0.004	No	27	0	ln(x)	0.01	Param.
Beryllium, total (mg/L)	AD-8	0.00005	0.00003	0.004	No	28	64.29	No	0.01	NP (NDs)
Beryllium, total (mg/L)	AD-9	0.001151	0.0007056	0.004	No	28	0	No	0.01	Param.
Cadmium, total (mg/L)	AD-15	0.0001114	0.000012	0.005	No	27	3.704	No	0.01	NP (normality)
Cadmium, total (mg/L)	AD-8	0.00005	0.000021	0.005	No	28	32.14	No	0.01	NP (normality)
Cadmium, total (mg/L)	AD-9	0.0005722	0.00022	0.005	No	28	0	ln(x)	0.01	Param.
Chromium, total (mg/L)	AD-15	0.009	0.00035	0.1	No	27	0	No	0.01	NP (normality)
Chromium, total (mg/L)	AD-8	0.0004105	0.0001709	0.1	No	28	17.86	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	AD-9	0.000599	0.0004041	0.1	No	28	28.57	No	0.01	Param.
Cobalt, total (mg/L)	AD-15	0.006	0.00294	0.0748	No	27	0	No	0.01	NP (normality)
Cobalt, total (mg/L)	AD-8	0.005803	0.003637	0.0748	No	28	0	No	0.01	Param.
Cobalt, total (mg/L)	AD-9	0.02243	0.0172	0.0748	No	28	0	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-15	2.268	1.546	5	No	27	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-8	1.286	0.6443	5	No	28	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-9	2.44	1.758	5	No	28	0	No	0.01	Param.
Fluoride, total (mg/L)	AD-15	0.15	0.07	4	No	27	33.33	No	0.01	NP (normality)
Fluoride, total (mg/L)	AD-8	0.7918	0.6234	4	No	28	7.143	x^2	0.01	Param.
Fluoride, total (mg/L)	AD-9	0.19	0.15	4	No	26	23.08	No	0.01	NP (normality)
Lead, total (mg/L)	AD-15	0.00298	0.00009	0.0011	No	27	11.11	No	0.01	NP (normality)
Lead, total (mg/L)	AD-8	0.0002	0.00008	0.0011	No	28	60.71	No	0.01	NP (NDs)
Lead, total (mg/L)	AD-9	0.0002	0.00008	0.0011	No	28	32.14	No	0.01	NP (normality)
Lithium, total (mg/L)	AD-15	0.01	0.00373	0.39	No	28	0	No	0.01	NP (normality)
Lithium, total (mg/L)	AD-8	0.09537	0.07526	0.39	No	28	0	No	0.01	Param.
Lithium, total (mg/L)	AD-9	1.12	0.205	0.39	No	28	0	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-15	0.000022	0.000005	0.002	No	26	50	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-8	0.000008	0.000005	0.002	No	27	85.19	No	0.01	NP (NDs)
Mercury, total (mg/L)	AD-9	0.000006	0.000003	0.002	No	27	33.33	No	0.01	NP (normality)
Molybdenum, total (mg/L)	AD-15	0.0005868	0.0004635	0.00243	No	28	67.86	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-8	0.0008389	0.0002	0.00243	No	28	82.14	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-9	0.0005	0.00011	0.00243	No	28	92.86	No	0.01	NP (NDs)
Selenium, total (mg/L)	AD-15	0.001273	0.0005507	0.05	No	27	7.407	x^(1/3)	0.01	Param.
Selenium, total (mg/L)	AD-8	0.0005	0.00008	0.05	No	28	50	No	0.01	NP (normality)
Selenium, total (mg/L)	AD-9	0.00051	0.00027	0.05	No	28	14.29	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-15	0.0005	0.00007	0.002	No	28	42.86	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-8	0.0005	0.0001	0.002	No	28	39.29	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-9	0.0002743	0.0001253	0.002	No	27	25.93	ln(x)	0.01	Param.

### Non-Parametric Confidence Interval

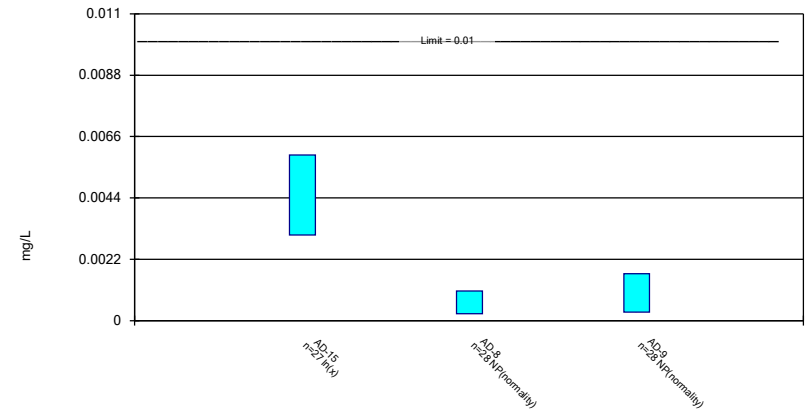
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Antimony, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

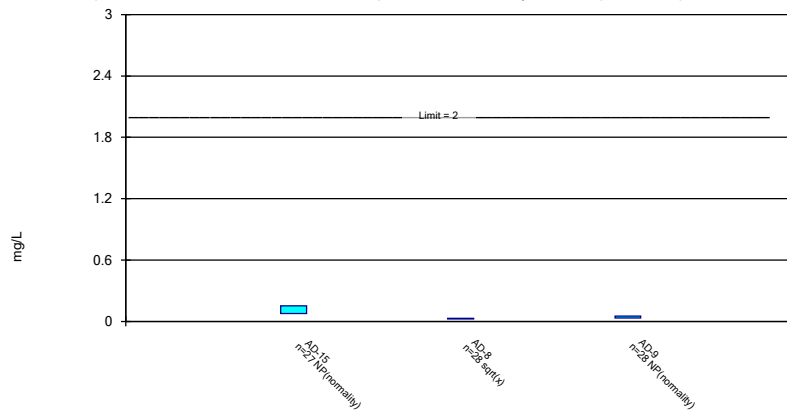
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

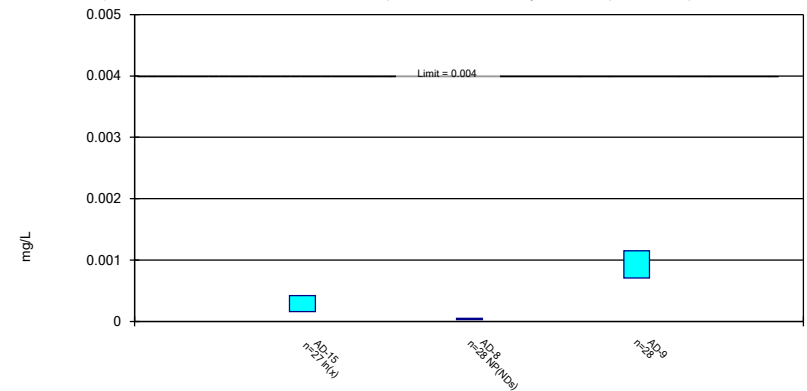
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

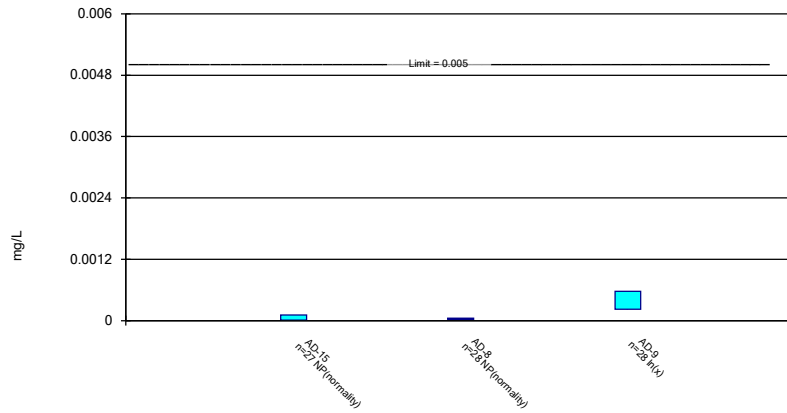
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Beryllium, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

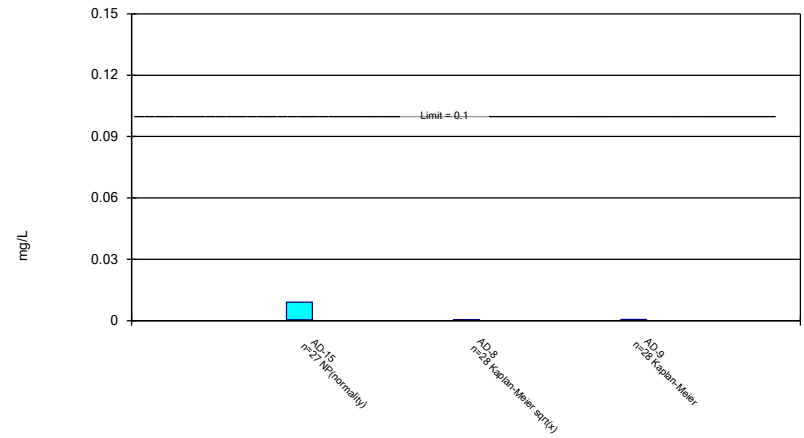
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

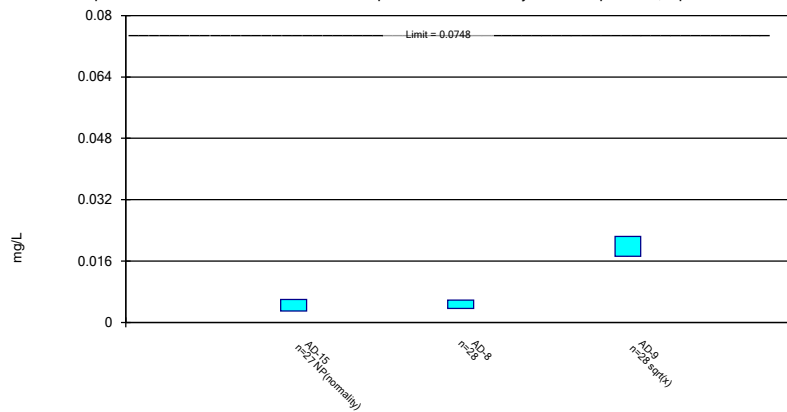
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

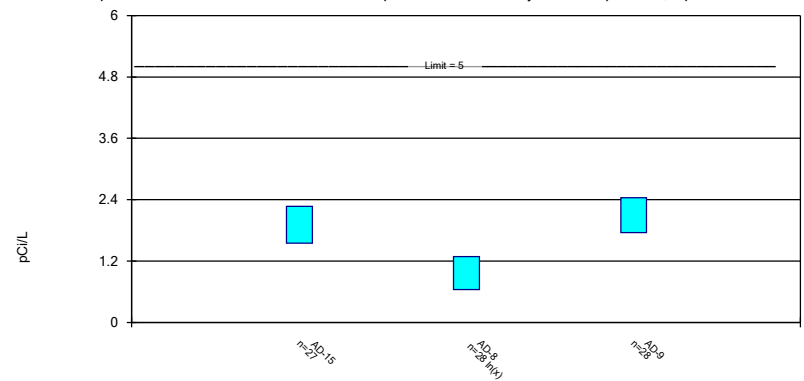
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric Confidence Interval

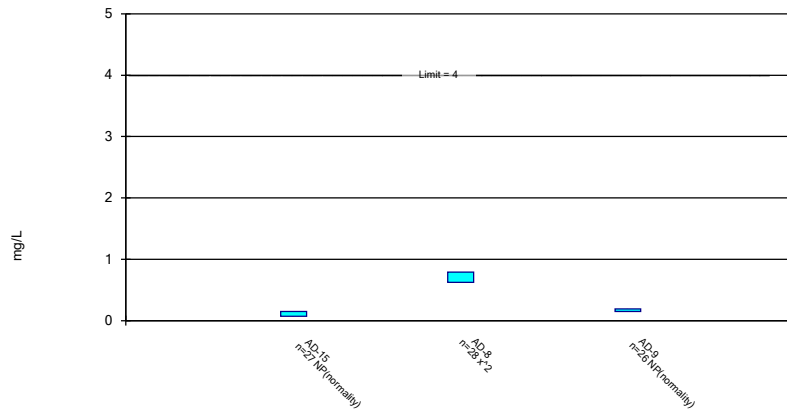
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
 Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

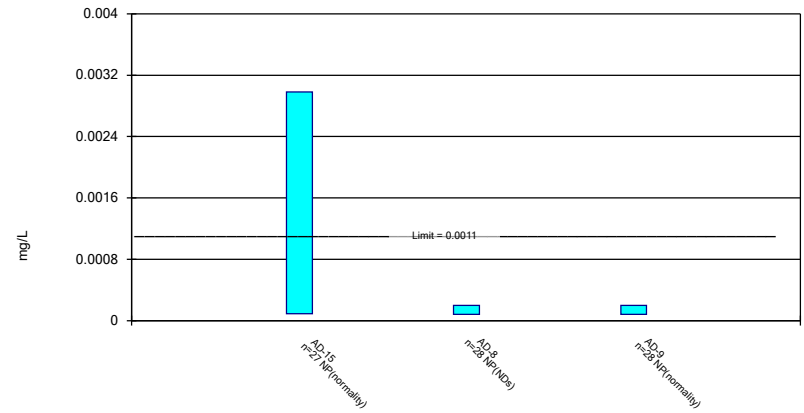
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Non-Parametric Confidence Interval

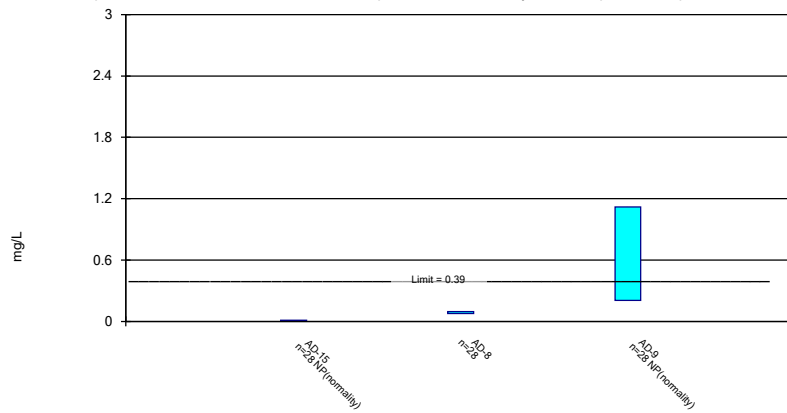
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Lead, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

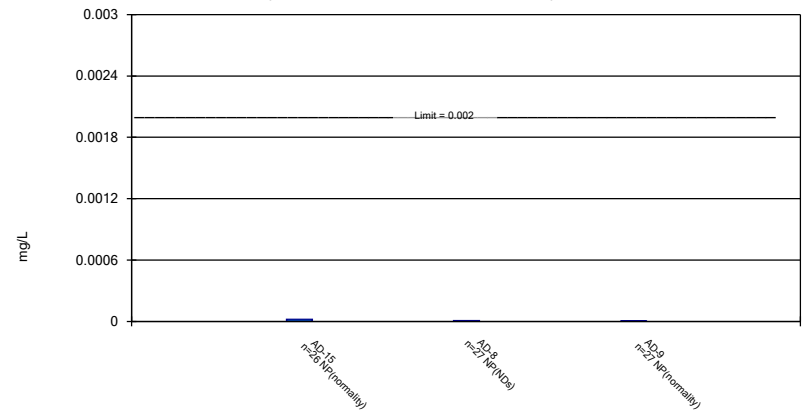
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Non-Parametric Confidence Interval

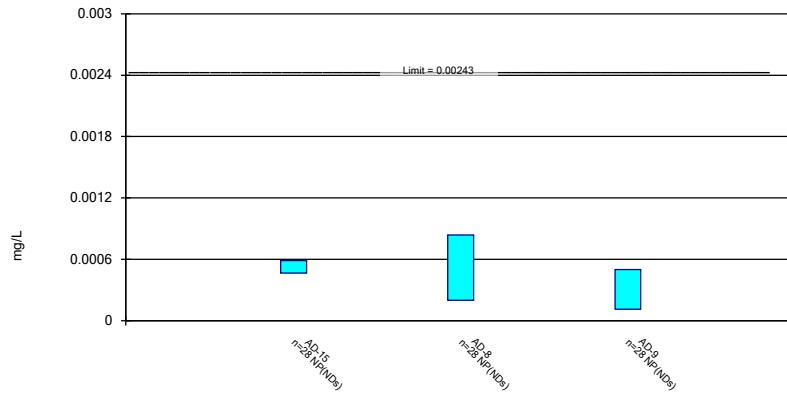
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Non-Parametric Confidence Interval

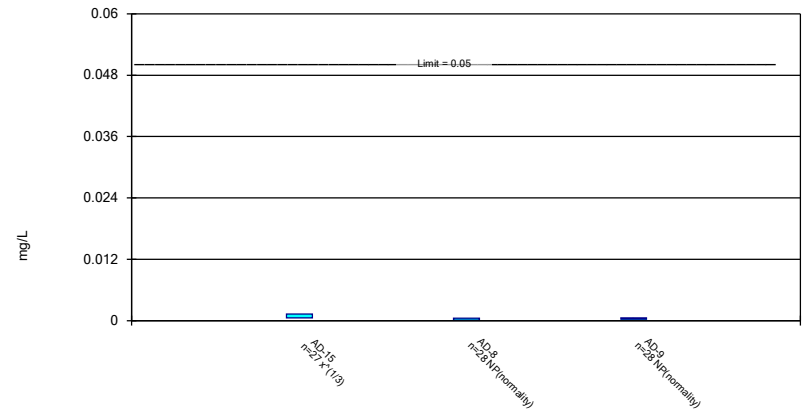
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Molybdenum, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### Parametric and Non-Parametric (NP) Confidence Interval

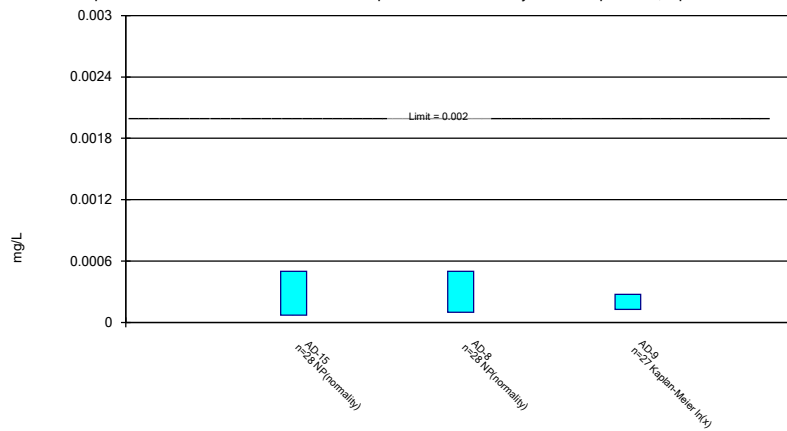
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### 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 11/13/2024 1:57 PM View: Confidence Intervals  
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

### **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: EA61F      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 Alp WASH AP  
Sample by Kathy McDonald

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 ( $\mu$ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ( $^{\circ}$ 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 262m  
Sample appearance 1049  
Sample time 04/01/24  
Sample date

BACKGROUND DUPLICATE 1200

Facility Name	Welsh
Sample by	PHH N. Mitchell

Sample Location ID AP-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 ( $\mu\text{S}/\text{cm}$ )	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ( $^{\circ}\text{C}$ )
1005	8.88	300	4.02	88	22.3	10.83	376	21.18
1010	6.05	300	3.74	68	20.0	10.6	412	19.72
1015	4.16	300	3.74	65	5.5	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	ACR WASH PP
Sample by	Kenny McDonald

Sample Location ID: AO-04c

Depth to water, feet (TOC)	<u>7.12</u>
Measured Total Depth, feet (TOC)	<u>18.82</u>

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)
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	<u>Clear</u>
Sample time	<u>0945</u>
Sample date	<u>04/01/24</u>

Facility Name	AEO W-USH AP
Sample by	K (MAY) M (DENTIST)

Sample Location ID	AP-05
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Depth to water, feet (TOC)	13.25
Measured Total Depth, feet (TOC)	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 ( $\mu S/cm$ )	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ( $^{\circ}C$ )		
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		

Total volume purged	
Sample appearance	TURBID
Sample time	0845
Sample date	04/02/74



Facility Name AF WASH PP  
 Sample by Kerry M. Donald

Sample Location ID AD-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 ( $\mu$ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ( $^{\circ}$ 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  
 Sample appearance CLEAR  
 Sample time 0848  
 Sample date 04/01/24

Facility Name: *ACP WAST PP*  
 Sample by: *KEVIN M. DONARD*

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: *669m*  
 Sample appearance: *1021*  
 Sample time: *04/02/24*  
 Sample date: *04/02/24*

*PDAP DUPLICATE 1200*

Facility Name  
Sample by

Welsh  
Mott MacDonald

Sample Location ID

AD-11

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

14.35  
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	966	15.2	9.69	465	21.21
1029	14.57	200	3.67	811	22.8	1.15	455	21.23
1034	14.58	200	3.66	875	7.8	0.65	450	21.34
1035	14.51	200	3.57	852	7.7	0.86	447	21.38

Total volume purged  
Sample appearance  
Sample time  
Sample date

1041  
4-2-24

Facility Name	ACE WEST 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: Matt Hamilton

Sample Location ID: AD-14

Depth to water, feet (TOC): 12.46  
 Measured Total Depth, feet (TOC): 21.27

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)
858	12.74	220	4.09	350	2.7	11.44	445	22.75
903	12.76	220	3.81	255	0	2.58	478	18.55
908	12.78	220	3.77	248	0	2.65	478	18.50

Total volume purged: \_\_\_\_\_  
 Sample appearance: clear  
 Sample time: 9:16  
 Sample date: 4-2-24

Duplicate  
 Landfill  
 1230

Facility Name	Wells
Sample by	Hett Hamilton

Sample Location ID: AD-15

Depth to water, feet (TOC)	20.54
Measured Total Depth, feet (TOC)	48.15

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)
916	21.30	280	3.96	195	118	5.63	356	23.15
921	21.41	280	3.85	132	107	1.02	448	23.44
926	21.49	280	3.85	128	85.3	0.80	461	23.57
931	21.46	280	4.05	142	55.0	0.65	461	23.66
936	21.47	280	4.24	168	38.7	0.13	448	23.76
941	21.48	280	4.35	175	35.5	0.62	442	23.71
946	21.45	280	4.36	183	35.5	0.61	435	23.74

Total volume purged	
Sample appearance	clear
Sample time	948
Sample date	4-1-24

AD-2 - 13.55  
 AD-18 484  
 AD-22 2.13  
 AD-10 - 19.11  
 AD-12 19.23  
 AD-23 - 2.79

Facility Name: Welsh  
Sample by: Mont Hamilton

Sample Location ID: AD-16R

Depth to water, feet (TOC): 24.55  
Measured Total Depth, feet (TOC): 31.30

Depth to water date: 4-2-24

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 ( $^{\circ}\text{C}$ )
945	25.07	150	2.85	163	4.0	9.43	547	18.87
954	25.16	150	2.66	146	3.2	1.45	551	18.20
959	25.24	150	2.67	211	2.0	1.75	545	19.41

Total volume purged: \_\_\_\_\_  
Sample appearance: Clear  
Sample time: 1001  
Sample date: 4-2-24





# CCR Groundwater Monitoring Well Inspection Form

Facility: Wels9  
 Sampling Contractor: Eogk

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: [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: WFLS HPP  
 Sample by: KENNETH M. DEWALD

Sample Location ID: A-D-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 ( $\mu\text{S/cm}$ )	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ( $^{\circ}\text{C}$ )
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: CLEAR  
 Sample time: 0935  
 Sample date: 09/10/24

BACKGROUND DUP 1100

Facility Name	Wellington
Sample by	John Hamilton
Depth to water, feet (TOC)	9.64
Measured Total Depth, feet (TOC)	20.13

Sample Location ID	AD-3
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 - BASP  
1159

Facility Name	WASH PP
Sample by	Ricky M. D'Amato

Sample Location ID	AD-09c
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Depth to water, feet (TOC)	9.60
Measured Total Depth, feet (TOC)	18.82

Depth to water date	09/10/24
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Purge Stabilization Data										
Time	Water Depth (from TOC)	Flow Rate (mL/min)	pH (S.U.)	Spec Cond ( $\mu$ S/cm)	Turbidity (N.T.U)	D.O. (mg/L)	ORP (mV)	Temperature ( $^{\circ}$ 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


Facility Name	WFLSH PP
Sample by	KERRY McDONALD

Sample Location ID	AD-05
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Depth to water, feet (TOC)	13.72
Measured Total Depth, feet (TOC)	32.88

Depth to water date	09/10/74
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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)
0816	15.02	102	6.34	617	216	2.08	203	20.82
0821	16.11	102	6.29	584	194	1.65	258	20.87

Total volume purged	
Sample appearance	SLIGHTLY TURBID (KROASH BRAND)
Sample time	0840
Sample date	09/10/74

Facility Name: W FISH 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: CL 699  
 Sample appearance: 1031  
 Sample time: 09/09/24  
 Sample date:

Facility Name	WEST PP
Sample by	K. Kim (D. Perry)

Sample Location ID **AD-09**

Depth to water, feet (TOC)	14.93
Measured Total Depth, feet (TOC)	36.45

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)	
0846	14.55	230	5.64	352	0.8	3.87	282	22.52	
0851	14.57	230	5.61	352	0.2	2.13	285	22.40	
0856	14.57	230	5.60	352	0.0	2.09	288	22.36	
0901	14.58	230	5.60	351	0.0	2.07	289	22.35	

Total volume purged	
Sample appearance	clear
Sample time	0903
Sample date	09/08/24

PBAP DUPLICATE 1100









Facility Name	Walsh
Sample by	Matt Hamilton

Sample Location ID	AD-15
Depth to water date	9-9-24

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

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)
9:04	22.91	300	4.67	232	146	1.55	407	22.32
9:09	23.13	300	3.91	275	45.8	1.42	386	22.65
9:14	23.15	300	3.70	244	35.3	1.34	378	22.68
9:19	23.16	300	3.70	302	37.1	1.36	372	23.04
9:24	23.18	300	3.78	<del>300</del> 267	35.2	<del>1.33</del> 1.33	364	24.32

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

Facility Name	Melis 9
Sample by	MCTH Nam, H04

Sample Location ID **AD-16A**

Depth to water, feet (TOC)	25.38
Measured Total Depth, feet (TOC)	31.30

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)
9:54	25.78	150	2.58	181	12.8	2.93	558	21.96
10:05	25.85	150	2.48	200	4.8	0.64	555	21.07
10:21	25.97	150	2.45	241	2.9	0.61	554	20.94

Total volume purged	
Sample appearance	clear
Sample time	1006
Sample date	9.10.24





# 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

Date: \_\_\_\_\_

COC/Order #: **241174**

For Lab Use Only:

Sample Identification	Analysis Turnaround Time (in Calendar Days) Routine (28 days)			Field-filter 500 mL bottle, then pH<2, HNO <sub>3</sub>	250 mL bottle, pH<2, HNO <sub>3</sub>	1 L bottle, Cool, 0-6°C	Three (six every 10hr*) 1 L bottles, pH<2, HNO <sub>3</sub>	250 mL Glass Bottle, HCL pH<2	Sample Specific Notes:
	Sample Date	Sample Time	# of Cont.						
AD-1	4/1/2024	1049	8	disolved Fe and Mn	B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL		X		Routine (28 days)
AD-5	4/2/2024	845	5				X		TG-32 needed
AD-17	4/1/2024	1111	5				X		
DUPLICATE - BACKGROUND	4/1/2024	1200	2				X		
EQUIPMENT BLANK - BACKGROUND	4/1/2024	1026	2				X		
FIELD BLANK - BACKGROUND	4/1/2024	1028	1				X		

Preservation Used: 1= Ice, 2= HCl; 3= H<sub>2</sub>SO<sub>4</sub>; 4=HNO<sub>3</sub>; 5=NaOH; 6= Other \_\_\_\_\_ ; F= filter in field \_\_\_\_\_ ; 2

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

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>Bob F. Jones</i>	Date/Time: 4-3-24	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received in Laboratory by: <i>Shimmer</i>	Date/Time: 4/5/24 1110

**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 <sup>+6</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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.

# 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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Mercury Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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.

- <sup>1</sup> 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.
- <sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
- <sup>3</sup> NA - Not applicable; NR - Not reviewed.
- <sup>4</sup> Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# 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)
- NA 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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	



## ICP-MS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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.

<sup>1</sup> 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.  
<sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).  
<sup>3</sup> NA - Not applicable; NR - Not reviewed.  
<sup>4</sup> 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 Qualifier Legend

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

**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

Sampler(s): Matt Hamilton Kenny McDonald

# Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

Site Contact:

Date:

For Lab Use Only:

COC/Order #:

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

250 mL bottle, pH<2, HNO <sub>3</sub>	Field-filter 500 mL bottle, then pH<2, HNO <sub>3</sub>	1 L bottle, Cool, 0-6°C	Three (six every 10th) 1 L bottles, pH<2, HNO <sub>3</sub>	40 mL Glass Vial lined bottle, HCL<2, pH<2	241145
---------------------------------------	---	-------------------------	--	--	--------

Mo, Se, TL Ba, Cd, Cr, Co, Pb, B, Ca, Li, Sb, As, Bi, Ra-226, Ra-228	disolved Fe and Mn	TDS, F, Cl, SO <sub>4</sub>		Hg	
---	--------------------	-----------------------------	--	----	--

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	4	F4	1	4	Sample Specific Notes:
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>Paul Hamilton</i>	Company: <i>E-ye</i>	Date/Time: <i>4-3-24 1300</i>	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: <i>4/4/24 1000</i>

**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 <sup>6+</sup> (pres) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Ion Chromatography Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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.

<sup>1</sup> 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.  
<sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).  
<sup>3</sup> NA - Not applicable; NR - Not reviewed.  
<sup>4</sup> 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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## TDS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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

- <sup>1</sup> 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.
- <sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
- <sup>3</sup> NA - Not applicable; NR - Not reviewed.
- <sup>4</sup> 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: 241179

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-8

Customer Description:

Lab Number: 241179-001

Preparation:

Date Collected: 04/01/2024 09:48 EDT

Date Received: 04/05/2024 23:10 EDT

## Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.009	µg/L	1	0.100	0.008	J1	GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Arsenic	0.22	µg/L	1	0.10	0.03		GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Barium	27.4	µg/L	1	0.20	0.05		GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Boron	0.989	mg/L	1	0.050	0.007		GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Cadmium	0.026	µg/L	1	0.020	0.004		GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Calcium	18.0	mg/L	1	0.05	0.02		GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Chromium	0.22	µg/L	1	0.30	0.07	J1	GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Cobalt	3.16	µg/L	1	0.020	0.005		GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Lithium	0.0688	mg/L	1	0.00030	0.00006		GES	04/11/2024 22:08	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 22:08	EPA 200.8-1994, Rev. 5.4
Selenium	0.05	µg/L	1	0.50	0.04	J1	GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4
Thallium	0.09	µg/L	1	0.20	0.02	J1	GES	04/11/2024 22:08	EPA 200.8-1994, Rev. 5.4

## Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.65	pCi/L	0.13	0.20		ST	05/10/2024 11:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	82.9	%						
Radium-228	0.14	pCi/L	0.15	0.51	L1, P2	TTP	04/30/2024 15:46	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	85.0	%						

\* The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



# Water Analysis Report

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

Job ID: 241179

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-9

Customer Description:

Lab Number: 241179-002

Preparation:

Date Collected: 04/02/2024 11:21 EDT

Date Received: 04/05/2024 23:10 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 22:13	EPA 200.8-1994, Rev. 5.4
Arsenic	0.83	µg/L	1	0.10	0.03		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Barium	50.2	µg/L	1	0.20	0.05		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Beryllium	0.722	µg/L	1	0.050	0.007		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Boron	0.109	mg/L	1	0.050	0.007		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Cadmium	0.224	µg/L	1	0.020	0.004		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Calcium	132	mg/L	1	0.05	0.02		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Chromium	0.40	µg/L	1	0.30	0.07		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Cobalt	19.9	µg/L	1	0.020	0.005		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Lead	0.06	µg/L	1	0.20	0.05	J1	GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Lithium	0.576	mg/L	1	0.00030	0.00006		GES	04/11/2024 22:13	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 22:13	EPA 200.8-1994, Rev. 5.4
Selenium	0.85	µg/L	1	0.50	0.04		GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4
Thallium	0.19	µg/L	1	0.20	0.02	J1	GES	04/11/2024 22:13	EPA 200.8-1994, Rev. 5.4

## Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.64	pCi/L	0.13	0.15	P1	ST	05/06/2024 09:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	97.7	%						
Radium-228	0.71	pCi/L	0.14	0.47	M1, L1, P2	TTP	04/30/2024 15:46	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	84.9	%						

\* 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: 241179

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: AD-15

Customer Description:

Lab Number: 241179-003

Preparation:

Date Collected: 04/01/2024 09:48 EDT

Date Received: 04/05/2024 23:10 EDT

## Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.017	µg/L	1	0.100	0.008	J1	GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Arsenic	3.29	µg/L	1	0.10	0.03		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Barium	82.5	µg/L	1	0.20	0.05		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Beryllium	0.115	µg/L	1	0.050	0.007		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Boron	0.231	mg/L	1	0.050	0.007		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Cadmium	0.012	µg/L	1	0.020	0.004	J1	GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Calcium	3.28	mg/L	1	0.05	0.02		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Chromium	0.42	µg/L	1	0.30	0.07		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Cobalt	3.41	µg/L	1	0.020	0.005		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Lead	0.15	µg/L	1	0.20	0.05	J1	GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Lithium	0.00403	mg/L	1	0.00030	0.00006		GES	04/11/2024 22:19	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 22:19	EPA 200.8-1994, Rev. 5.4
Selenium	0.68	µg/L	1	0.50	0.04		GES	04/11/2024 22:19	EPA 200.8-1994, Rev. 5.4
Thallium	0.06	µg/L	1	0.20	0.02	J1	GES	04/11/2024 22:19	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	0.13	0.15		ST	05/06/2024 09:43	SW-846 9315-1986, Rev. 0
Carrier Recovery	98.7	%						
Radium-228	0.68	pCi/L	0.13	0.43	L1, P2	TTP	04/30/2024 15:46	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	88.0	%						

\* The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



# Water Analysis Report

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

Job ID: 241179

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: DUPLICATE-PBAP

Customer Description:

Lab Number: 241179-004

Preparation:

Date Collected: 04/02/2024 13:00 EDT

Date Received: 04/05/2024 23:10 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 22:24	EPA 200.8-1994, Rev. 5.4
Arsenic	0.89	µg/L	1	0.10	0.03		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Barium	50.9	µg/L	1	0.20	0.05		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Beryllium	0.778	µg/L	1	0.050	0.007		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Boron	0.112	mg/L	1	0.050	0.007		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Cadmium	0.228	µg/L	1	0.020	0.004		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Calcium	138	mg/L	1	0.05	0.02		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Chromium	0.39	µg/L	1	0.30	0.07		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Cobalt	20.3	µg/L	1	0.020	0.005		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Lead	0.06	µg/L	1	0.20	0.05	J1	GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Lithium	0.619	mg/L	1	0.00030	0.00006		GES	04/11/2024 22:24	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 22:24	EPA 200.8-1994, Rev. 5.4
Selenium	0.95	µg/L	1	0.50	0.04		GES	04/11/2024 22:24	EPA 200.8-1994, Rev. 5.4
Thallium	0.20	µg/L	1	0.20	0.02		GES	04/11/2024 22:24	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: 241179

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: EQUIPMENT BLANK-PBAP

Customer Description:

Lab Number: 241179-005

Preparation:

Date Collected: 04/02/2024 10:59 EDT

Date Received: 04/05/2024 23:10 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 22:29	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Chromium	0.23	µg/L	1	0.30	0.07	J1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Cobalt	0.007	µg/L	1	0.020	0.005	J1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Lithium	0.00009	mg/L	1	0.00030	0.00006	J1	GES	04/11/2024 22:29	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 22:29	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 22:29	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 22:29	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: 241179

Customer: Welsh Power Station

Date Reported: 05/24/2024

Customer Sample ID: FIELD BLANK-PBAP

Customer Description:

Lab Number: 241179-006

Preparation:

Date Collected: 04/02/2024 10:57 EDT

Date Received: 04/05/2024 23:10 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 22:34	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Chromium	0.21	µg/L	1	0.30	0.07	J1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Cobalt	0.006	µg/L	1	0.020	0.005	J1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Lithium	0.00007	mg/L	1	0.00030	0.00006	J1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Molybdenum	0.2	µg/L	1	0.5	0.1	J1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	GES	04/11/2024 22:34	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	GES	04/11/2024 22:34	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: 241179

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.

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

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



# AEP WATER & WASTE SAMPLE RECEIPT FORM

<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	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>Misgma</u>			Number of Glass Containers: <u>5</u>				
Date/Time <u>04/05/24 11:10 AM</u>			Number of Mercury Containers: <u>✓</u>				
Were all temperatures within 0-6°C? Y / N or <u>N/A</u> 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 <sup>6</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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: mbcc / JDH / BKH

**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# 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.

# 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)
- NA 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 Sultmann      S. Sultmann      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:** 2401179  
**Prep Batch Number(s):** PB24040905

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Mercury Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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:** 2401179

**Prep Batch Number(s):** PB24040905

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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.

<u>Jonathan Barnhill</u>		<u>Lab Supervisor</u>	<u>4/22/2024</u>
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:** 4/22/2024  
**Laboratory Job Number:** 241179  
**Prep Batch Number(s):** PB24041003 QC2404114

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## ICP-MS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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:** 241179  
**Prep Batch Number(s):** PB24041003 QC2404114

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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:** 241179  
**Prep Batch Number(s):** 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 $CCB < 2.2 * MDL$ .

<sup>1</sup> 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.  
<sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).  
<sup>3</sup> NA - Not applicable; NR - Not reviewed.  
<sup>4</sup> 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: 241147

Customer: Welsh Power Station

Date Reported: 05/06/2024

Customer Sample ID: AD-8

Customer Description:

Lab Number: 241147-001

Preparation:

Date Collected: 04/01/2024 09:48 EDT

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

## Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	22.9	mg/L	2	0.04	0.01		CRJ	04/10/2024 01:06	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.75	mg/L	2	0.06	0.02		CRJ	04/10/2024 01:06	EPA 300.1 -1997, Rev. 1.0
Sulfate	146	mg/L	10	3.0	0.6		CRJ	04/10/2024 02:12	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	300	mg/L	1	50	20		ELT	04/05/2024 08:42	SM 2540C-2015

Customer Sample ID: AD-9

Customer Description:

Lab Number: 241147-002

Preparation:

Date Collected: 04/02/2024 11:21 EDT

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

## Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	67.3	mg/L	25	0.5	0.1		CRJ	04/10/2024 02:45	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.17	mg/L	2	0.06	0.02		CRJ	04/10/2024 04:57	EPA 300.1 -1997, Rev. 1.0
Sulfate	1060	mg/L	25	8	2		CRJ	04/10/2024 02:45	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1730	mg/L	1	50	20		ELT	04/05/2024 08:42	SM 2540C-2015

Customer Sample ID: AD-15

Customer Description:

Lab Number: 241147-003

Preparation:

Date Collected: 04/01/2024 10:48 EDT

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

## Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	29.2	mg/L	2	0.04	0.01		CRJ	04/10/2024 03:18	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.08	mg/L	2	0.06	0.02		CRJ	04/10/2024 03:18	EPA 300.1 -1997, Rev. 1.0
Sulfate	13.0	mg/L	2	0.6	0.1		CRJ	04/10/2024 03:18	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	130	mg/L	1	50	20		ELT	04/05/2024 08:47	SM 2540C-2015



# Water Analysis Report

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

Job ID: 241147

Customer: Welsh Power Station

Date Reported: 05/06/2024

Customer Sample ID: DUPLICATE - PBAP

Customer Description:

Lab Number: 241147-004

Preparation:

Date Collected: 04/02/2024 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	68.0	mg/L	25	0.5	0.1		CRJ	04/10/2024 03:51	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.16	mg/L	2	0.06	0.02		CRJ	04/10/2024 05:30	EPA 300.1 -1997, Rev. 1.0
Sulfate	1070	mg/L	25	8	2		CRJ	04/10/2024 03:51	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	1740	mg/L	1	50	20		ELT	04/05/2024 08:47	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.**



# AEP 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 _____			
Plant/Customer <u>Welsh</u>				Number of Plastic Containers: <u>4</u>			
Opened By <u>MGR/WLG</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 / N or N/A Initial: <u>WLG/MGR</u> <input checked="" type="radio"/> on ice / 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 / N Comments _____							
Was Chain of Custody received? <input checked="" type="radio"/> Y / N Comments _____							
Requested turnaround: <u>28 days</u> If RUSH, who was notified? _____							
pH (15 min)	Cr <sup>+6</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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: WLG/MGR

**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# 241147 Initial & Date & Time : \_\_\_\_\_

Logged by WLG 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	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 PBAP  
**Reviewer Name:** Tim Arnold  
**LRC Date:** 4/12/24  
**Laboratory Job Number:** 241147  
**Prep Batch Number(s):** QC2404085

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	



## Ion Chromatography Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 PBAP  
**Reviewer Name:** Tim Arnold  
**LRC Date:** 4/12/24  
**Laboratory Job Number:** 241147  
**Prep Batch Number(s):** QC2404085

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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      *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 PBAP  
**Reviewer Name:** Michael Ohlinger  
**LRC Date:** 05/06/2024  
**Laboratory Job Number:** 241147  
**Prep Batch Number(s):** QC2404077

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## TDS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 PBAP

**Reviewer Name:** Michael Ohlinger

**LRC Date:** 05/06/2024

**Laboratory Job Number:** 241147

**Prep Batch Number(s):** QC2404077

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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 PBAP  
**Reviewer Name:** Michael Ohlinger  
**LRC Date:** 05/06/2024  
**Laboratory Job Number:** 241147  
**Prep Batch Number(s):** QC2404077

Exception Report No.	Description

<sup>1</sup> 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.

<sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

<sup>3</sup> NA - Not applicable; NR - Not reviewed.

<sup>4</sup> 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: 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	RPL	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).

# Chain of Custody Record

**Program:** Coal Combustion Residuals (CCR)

**Site Contact:** 14      **Date:** 2      **COC/Order #:** 242778

**For Lab Use Only:**

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Turnaround Time (in Calendar Days) Routine (28 days)						Sample Specific Notes:
						250 mL bottle, pH<2, HNO <sub>3</sub>	Field-filter 500 mL bottle, then pH<2, HNO <sub>3</sub>	1 L bottle, Cool, 0-5°C	Three (six every 10th*) 1 L bottles, pH<2, HNO <sub>3</sub>	125 mL PTFE lined bottle, HCL, pH<2		
AD-1	9/10/2024	935	G	GW	8	X			X			Routine (28 days)
AD-5	9/10/2024	840	G	GW	5	X			X			TG-32 needed
AD-17	9/10/2024	1106	G	GW	5	X			X			
DUPLICATE - BACKGROUND	9/10/2024	1100	G	GW	2	X						
EQUIPMENT BLANK - BACKGROUND	9/10/2024	911	G	GW	2	X						
FIELD BLANK - BACKGROUND	9/10/2024	909	G	GW	1	X						

**Preservation Used:** 1= Ice, 2= HCl; 3= H<sub>2</sub>SO<sub>4</sub>; 4=HNO<sub>3</sub>; 5=NaOH; 6= Other

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

**Special Instructions/QC Requirements & Comments:**  
TG-32 needed

Relinquished by: <i>John Frank</i>	Company: <i>F&amp;K</i>	Date/Time: 9-11-24 11:00	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>Michael Abby</i>	Date/Time: 9/16/24 11:00





# 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# <del>240009843</del> , 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 <sup>6</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Mercury Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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:

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- 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	Digitally signed by Elizabeth L. Tinapple Date: 2024.10.14 07:45:55 -0400	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## ICP-MS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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

<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</u>			Total # of Containers RECEIVED in Job: <u>4</u>			
Opened By <u>MJD/mch</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>MCH</u>			off ice? <input checked="" type="radio"/> no ice			
If No, specify each deviation(s) on back of form.			(IR Gun Ser# <del>240009843</del> , 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>MJD 9/16/24</u>			
Requested turnaround: <u>Route</u>			If RUSH, who was notified?			
pH (15 min)	Cr <sup>6</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (48 hr)	Hg-diss (pres ) (48 hr)		

Was pH checked & Color Coding done?  Y /  N or N/A (pH) Initial & Date: Mch 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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Ion Chromatography Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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

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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## TDS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-8

Customer Description:

Lab Number: 242779-001

Preparation:

Date Collected: 09/09/2024 11:31 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	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Arsenic	0.24	µg/L	1	0.10	0.03		ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Barium	30.0	µg/L	1	0.20	0.05		ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Beryllium	0.008	µg/L	1	0.050	0.007	J1	ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Boron	0.996	mg/L	1	0.050	0.007		ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Cadmium	0.017	µg/L	1	0.020	0.004	J1	ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Calcium	22.4	mg/L	1	0.05	0.02		ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Chromium	0.29	µg/L	1	0.30	0.07	J1	ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Cobalt	5.74	µg/L	1	0.020	0.005		ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Lithium	0.0713	mg/L	1	0.00030	0.00006		ELT	09/20/2024 14:28	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	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Selenium	0.06	µg/L	1	0.50	0.04	J1	ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4
Thallium	0.13	µg/L	1	0.20	0.02	J1	ELT	09/20/2024 14:28	EPA 200.8-1994, Rev. 5.4

## Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.73	pCi/L	0.19	0.28		ST	09/19/2024 10:08	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.4	%						
Radium-228	0.54	pCi/L	0.12	0.39		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	95.5	%						

\* 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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-9

Customer Description:

Lab Number: 242779-002

Preparation:

Date Collected: 09/09/2024 10:03 EDT

Date Received: 09/16/2024 11:00 EDT

## Metals

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.010	µg/L	1	0.100	0.008	J1	ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Arsenic	0.31	µg/L	1	0.10	0.03		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Barium	50.7	µg/L	1	0.20	0.05		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Beryllium	1.76	µg/L	1	0.050	0.007		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Boron	0.400	mg/L	1	0.050	0.007		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Cadmium	0.435	µg/L	1	0.020	0.004		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Calcium	14.4	mg/L	1	0.05	0.02		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Chromium	0.71	µg/L	1	0.30	0.07		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Cobalt	24.9	µg/L	1	0.020	0.005		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Lithium	0.201	mg/L	1	0.00030	0.00006		ELT	09/20/2024 14:38	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	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Selenium	0.61	µg/L	1	0.50	0.04		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4
Thallium	0.25	µg/L	1	0.20	0.02		ELT	09/20/2024 14:38	EPA 200.8-1994, Rev. 5.4

## Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.26	pCi/L	0.08	0.18	P2, L1, O2	TTP	10/02/2024 15:03	SW-846 9315-1986, Rev. 0
Carrier Recovery	88.5	%						
Radium-228	0.55	pCi/L	0.13	0.43		TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	89.3	%						

\* 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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: AD-15

Customer Description:

Lab Number: 242779-003

Preparation:

Date Collected: 09/09/2024 10:26 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	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Arsenic	3.18	µg/L	1	0.10	0.03		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Barium	75.1	µg/L	1	0.20	0.05		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Beryllium	0.180	µg/L	1	0.050	0.007		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Boron	0.171	mg/L	1	0.050	0.007		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Cadmium	0.013	µg/L	1	0.020	0.004	J1	ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Calcium	2.66	mg/L	1	0.05	0.02		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Chromium	0.35	µg/L	1	0.30	0.07		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Cobalt	3.32	µg/L	1	0.020	0.005		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Lead	0.18	µg/L	1	0.20	0.05	J1	ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Lithium	0.00403	mg/L	1	0.00030	0.00006		ELT	09/20/2024 14:49	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	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Selenium	0.58	µg/L	1	0.50	0.04		ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4
Thallium	0.06	µg/L	1	0.20	0.02	J1	ELT	09/20/2024 14:49	EPA 200.8-1994, Rev. 5.4

## Radiochemistry

Parameter	Result	Units	UNC*(+/-)	MDA*	Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.32	pCi/L	0.09	0.21	P2, L1, O2	TTP	10/02/2024 15:03	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.2	%						
Radium-228	0.65	pCi/L	0.11	0.37	M1, P3	TTP	09/23/2024 16:22	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	102	%						

\* 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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Duplicate - PBAP

Customer Description:

Lab Number: 242779-004

Preparation:

Date Collected: 09/09/2024 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	0.020	µg/L	1	0.100	0.008	J1	ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Arsenic	0.31	µg/L	1	0.10	0.03		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Barium	50.2	µg/L	1	0.20	0.05		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Beryllium	1.73	µg/L	1	0.050	0.007		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Boron	0.391	mg/L	1	0.050	0.007		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Cadmium	0.424	µg/L	1	0.020	0.004		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Calcium	14.2	mg/L	1	0.05	0.02		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Chromium	0.58	µg/L	1	0.30	0.07		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Cobalt	24.8	µg/L	1	0.020	0.005		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Lead	0.08	µg/L	1	0.20	0.05	J1	ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Lithium	0.196	mg/L	1	0.00030	0.00006		ELT	09/20/2024 14:59	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	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Selenium	0.61	µg/L	1	0.50	0.04		ELT	09/20/2024 14:59	EPA 200.8-1994, Rev. 5.4
Thallium	0.25	µg/L	1	0.20	0.02		ELT	09/20/2024 14:59	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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Equipment Blank - PBAP

Customer Description:

Lab Number: 242779-005

Preparation:

Date Collected: 09/09/2024 11:10 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	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Chromium	0.25	µg/L	1	0.30	0.07	J1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Cobalt	0.011	µg/L	1	0.020	0.005	J1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Lithium	0.00015	mg/L	1	0.00030	0.00006	J1	ELT	09/20/2024 15:04	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	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/20/2024 15:04	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/20/2024 15:04	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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

Customer Sample ID: Field Blank - PBAP

Customer Description:

Lab Number: 242779-006

Preparation:

Date Collected: 09/09/2024 11:07 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	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03	µg/L	1	0.10	0.03	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Barium	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007	µg/L	1	0.050	0.007	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Boron	<0.007	mg/L	1	0.050	0.007	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02	mg/L	1	0.05	0.02	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Chromium	0.28	µg/L	1	0.30	0.07	J1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Cobalt	<0.005	µg/L	1	0.020	0.005	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Lithium	0.00006	mg/L	1	0.00030	0.00006	J1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Molybdenum	<0.1	µg/L	1	0.5	0.1	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Selenium	<0.04	µg/L	1	0.50	0.04	U1	ELT	09/20/2024 15:09	EPA 200.8-1994, Rev. 5.4
Thallium	<0.02	µg/L	1	0.20	0.02	U1	ELT	09/20/2024 15:09	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: 242779

Customer: Welsh Power Station

Date Reported: 10/17/2024

### Data Qualifier Legend

U1 - Not detected at or below method detection limit (MDL).

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

P2 - The precision on the laboratory control sample duplicate (LCSD) was above acceptance limits.

L1 - The associated laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) recovery was outside acceptance limits.

O2 - Insufficient sample was received to perform the MS and duplicate analyses with this sample batch.

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

P3 - The precision on the matrix spike duplicate (MSD) was above acceptance limits.









# 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	<input type="radio"/> UPS	<input checked="" type="radio"/> FedEX	<input type="radio"/> USPS
				Other _____		
Plant/Customer <u>Welsh PBAP</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# <del>240009843</del> , Expir. 01-03-2026)			
Was container in good condition? <input checked="" type="radio"/> Y / N			Comments <u>221821056 10/12/24</u>			
Was Chain of Custody received? <input checked="" type="radio"/> Y / N			Comments <u>MWD 9/6/24</u>			
Requested turnaround: <u>Routine</u>			If RUSH, who was notified?			
pH (15 min)	Cr <sup>6</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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 \_\_\_\_\_ (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>242779</u>	Comments: _____	
Logged by <u>MWD</u>	_____	
(Record Test Count on back of form)	_____	
	_____	
	_____	
	_____	
Total # of Containers LISTED on COC: <u>23</u>		



## Review for Received Jobs:

Job # 242779 Peer Review Initials & Date RB 9/17/24

Mark Yes or No. Mark "corrected by" with you Initials & Date when making corrections.

### STEP 1: Create Login Report and Compare to COC

1. Open LIMS, go to "Job Review". Select job number that is being reviewed.
2. Right click on Job, go to "Reports", select "Login Report";
3. Select "Export Document" When "PDF Export Options" appears, select "OK". Save "Login Report" to H:Internal/Login Reports/**Not Sent Login Reports**
4. Save with the following format:
  - a. "Job Number" "Location Abbreviation" "General Sample Info" "Collection Date" Login Report
  - b. Example: 241496 CK TRS & WWTP 5-(6,7)-24 Login Report
  - c. Close the login report preview screen.

### STEP 2: Reviewing and Receiving Jobs

- Y  N 1. (For each sample) Does Count of Tests from COC match the Count of Tests on Login Report?
- a. Especially for Total & Dissolved
  - b. COUNT Tests on each Sample from COC & record on back of Sample Receipt Form.
  - c. Compare Your Count to the Login Report (& to Test Count recorded at Login)

#### From Job Tab

- Y  N 2. Is location correct?
- a. Plant name listed
  - b. Or correct Region in the Location field (i.e. wastes received from REC)
- Y  N 3. Is the Customer listed appropriately? (Blank except for the following list.)
- i. Mitchell Water
  - ii. Amos Water vs Amos Wells
  - iii. Mountaineer Water
  - iv. Welsh Water
  - v. (Or in case of Wastes from REC – is Customer Name listed?)
- Y  N 4. Is the COC signed and dated with the date/time received?
- a. Does the Job "Date Received" match the COC?
- Y  N 5. Is the "Due Date" in LIMS (or "Report Due" on Login Report) correct?
- a. If "Date By" on COC is marked with a date, this date takes precedence.
  - b. 28 days for wells marked "routine"
  - c. 14 days for non-wells marked "routine"
  - d. Rush is 3 business days.
  - e. Priority is 1 week.

#### From Samples Tab

- Y  N 6. Is Collection Date/Time entered correctly?
- a. Eastern Plants should all match COC
  - b. Western Plants should be 1 hour later in LIMS vs. COC

- Y/N** 7. Does "Customer Sample Name" match COC?  
 a. Sampling Point (alias) (if available) similar to "Customer Sample Name"
- Y/N** 8. Do all of the "Date Results Required" on the Samples match the Job?  
 a. If subsample due dates are incorrect,  
 i. Right click on job  
 ii. Go to "Workflow Login"  
 iii. Select "Modify"  
 iv. Go to "Sample Data" Tab  
 v. Click on first sample "Date Results Required" – make changes  
 vi. Hit Right Arrow Button at top right of window  
 vii. Select "Ok"
- Y/N** 9. Is the project selected and correct in LIMS?  
 a. Either "CCR" for wells or "Other" for all other project types (or "Vault Manhole" for specific TCLP samples)

**From Test Tab**

*Check the following items and verify they are correct. If incorrect, then check with Login Staff:*

- Y/N** 10. Do tests listed on COC match what has been logged in LIMS?  
 i. If Clinch or Glen Lyn (Va only) ensure that secondary tests are selected.  
 ii. Except Glen Lyn's "Addair Run"/"Bluestone Facility" which is in WV and should be primary tests.
- Y/N** 11. Is the "Sample Receipt Form" filled out completely and correctly?  
 a. Based on COC ("dissolved", "request Filtration"), Did any samples require filtration ?  
 \_\_\_\_\_ And IF SO was this marked YES on the Sample Receipt Form ?

**STEP 3: "Receive Job" in the LIMS**

When STEP 2 REVIEW is complete,

- Initial and Date the "Peer Reviewed By" line on top of this form.
- Go to the "Job" tab in "Job Review". Select right click on job number. Go to "Process", select "Receive Job".

**STEP 4: Re- create Login Report and Scan COC packet**

*Reminder: If a change was made to the login, re-create (overwrite original) login report per STEP 1.*

1. Add Peer Review form to COC packet (COC and Sample receipt form)
2. Scan full COC packet (COC, sample receipt form, login peer review checklist) and save to H:Internal/COC/WWAG/Not Sent COC
3. Save with the following format:
  - a. COC "Job Number" "Location Abbreviation"
  - b. Example: COC 241496 CK
4. Place paper COC packet in folder with label and deliver to Chemist – who will email Login Report and COC to customer.

Water – Blue      Solids – Pink      Waste - Green

# 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.

Suzanne Sulzmann      S. Sulzmann      Plenic 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:** 242779  
**Prep Batch Number(s):** PB24091303, 24091704

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Mercury Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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:** 242779  
**Prep Batch Number(s):** PB24091303, 24091704

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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	<small>Elizabeth L Tinapple</small>	<small>Digitally signed by Elizabeth L Tinapple Date: 2024.10.14 08:00:57 -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 Tinapple  
**LRC Date:** 10/14/2024  
**Laboratory Job Number:** 242779  
**Prep Batch Number(s):** PB24091904 QC2409133

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## ICP-MS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 Tinapple

**LRC Date:** 10/14/2024

**Laboratory Job Number:** 242779

**Prep Batch Number(s):** PB24091904 QC2409133

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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:** Elizabeth Tinapple

**LRC Date:** 10/14/2024

**Laboratory Job Number:** 242779

**Prep Batch Number(s):** PB24091904 QC2409133

Exception Report No.	Description
ER1	Linear Dynamic Range (LDR) study used to determine upper limit of analyte calibration.
ER2	CCB acceptance criteria is $CCB < 2.2 * MDL$ .

<sup>1</sup> 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.  
<sup>2</sup> O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).  
<sup>3</sup> NA - Not applicable; NR - Not reviewed.  
<sup>4</sup> 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: 242753

Customer: Welsh Power Station

Date Reported: 10/02/2024

Customer Sample ID: AD-8

Customer Description:

Lab Number: 242753-001

Preparation:

Date Collected: 09/09/2024 11:31 EDT

Date Received: 09/12/2024 09:50 EDT

## Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	19.4	mg/L	2	0.06	0.02		CRJ	09/18/2024 14:24	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.87	mg/L	2	0.06	0.02		CRJ	09/18/2024 14:24	EPA 300.1 -1997, Rev. 1.0
Sulfate	150	mg/L	10	3.0	0.6		CRJ	09/18/2024 13:52	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	300	mg/L	1	50	20		BHB	09/13/2024 10:14	SM 2540C-2015

Customer Sample ID: AD-9

Customer Description:

Lab Number: 242753-002

Preparation:

Date Collected: 09/09/2024 10:03 EDT

Date Received: 09/12/2024 09:50 EDT

## Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	14.6	mg/L	2	0.06	0.02		CRJ	09/18/2024 16:03	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.18	mg/L	2	0.06	0.02		CRJ	09/18/2024 16:03	EPA 300.1 -1997, Rev. 1.0
Sulfate	157	mg/L	25	8	2		CRJ	09/18/2024 15:30	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	380	mg/L	1	50	20		BHB	09/13/2024 10:20	SM 2540C-2015

Customer Sample ID: AD-15

Customer Description:

Lab Number: 242753-003

Preparation:

Date Collected: 09/09/2024 10:26 EDT

Date Received: 09/12/2024 09:50 EDT

## Ion Chromatography

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Chloride	27.8	mg/L	2	0.06	0.02		CRJ	09/18/2024 18:48	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.06	mg/L	2	0.06	0.02		CRJ	09/18/2024 18:48	EPA 300.1 -1997, Rev. 1.0
Sulfate	9.1	mg/L	2	0.6	0.1		CRJ	09/18/2024 18:48	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	130	mg/L	1	50	20		BHB	09/13/2024 10:20	SM 2540C-2015



# Water Analysis Report

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

Job ID: 242753

Customer: Welsh Power Station

Date Reported: 10/02/2024

Customer Sample ID: DUPLICATE - PBAP

Customer Description:

Lab Number: 242753-004

Preparation:

Date Collected: 09/09/2024 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	19.4	mg/L	2	0.06	0.02		CRJ	09/18/2024 17:42	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.19	mg/L	2	0.06	0.02		CRJ	09/18/2024 17:42	EPA 300.1 -1997, Rev. 1.0
Sulfate	243	mg/L	25	8	2		CRJ	09/18/2024 17:09	EPA 300.1 -1997, Rev. 1.0

## Wet Chemistry

Parameter	Result	Units	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	510	mg/L	1	50	20		BHB	09/13/2024 10:28	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.**

# Chain of Custody Record

Program: Coal Combustion Residuals (CCR)

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

**Contacts:** Michael Ohlinger (614-838-4184)

Project Name: Weish PBAP  
 Contact Name: Rebecca Jones  
 Contact Phone: (737) 330-3725

Sampler(s): Matt Hamilton Kenny McDonald

Site Contact: \_\_\_\_\_ Date: \_\_\_\_\_

COC/Order #: **242753**

For Lab Use Only:

Sample Identification	Analysis Turnaround Time (in Calendar Days)		Field-filter 500 mL bottle, then pH<2, HNO <sub>3</sub>	250 mL bottle, pH<2, HNO <sub>3</sub>	1 L bottle, Cool, 0-5°C	Three (six every 10th*) 1 L bottles, pH<2, HNO <sub>3</sub>	40 mL Glass vial or 126 mL PTFE lined bottle, HCL, pH<2	Sample Specific Notes:
	Routine (28 days)	TG-32 needed						
AD-8	1031	G	GW	1				
AD-9	903	G	GW	1				
AD-15	926	G	GW	1				
DUPLICATE - PBAP	1100	G	GW	1				

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Initials	B, Ca, Li, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, TL	TD <sub>5</sub> , F, Cl, SO <sub>4</sub>	40 mL Glass vial or 126 mL PTFE lined bottle, HCL, pH<2	4	1	4	2
9/9/2024	1031	G	GW	1			X					
9/9/2024	903	G	GW	1			X					
9/9/2024	926	G	GW	1			X					
9/9/2024	1100	G	GW	1			X					

Preservation Used: 1= Ice, 2= HCl; 3= H<sub>2</sub>SO<sub>4</sub>; 4=HNO<sub>3</sub>; 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:  
 TG-32 needed

Relinquished by: <i>[Signature]</i>	Company: <i>Fask</i>	Date/Time: 9-11-24 11cc	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in laboratory by: <i>[Signature]</i>	Date/Time: 9/12/24 9:50



# 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	<input type="radio"/> USPS
			Other _____			
Plant/Customer <u>WELSH</u>			Total # of Containers RECEIVED in Job: <u>4</u>			
Opened By <u>MSO/MLK</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>			<input checked="" type="radio"/> on ice / <input type="radio"/> no ice			
If No, specify each deviation(s) on back of form.			(IR Gun Ser# <del>240009848</del> , 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>MSO 9/6/24</u>			
Requested turnaround: <u>Route</u>			If RUSH, who was notified?			
pH (15 min)	Cr <sup>6+</sup> (pres ) (24 hr)	NO <sub>2</sub> or NO <sub>3</sub> (48 hr)	ortho-PO <sub>4</sub> (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#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>242753</u>	Comments: _____	
Logged by <u>MSO</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		Chemist Principle	09/20/2024
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 - PBAP  
**Reviewer Name:** Tim Arnold  
**LRC Date:** 9/20/2024  
**Laboratory Job Number:** 242753  
**Prep Batch Number(s):** QC2409110

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## Ion Chromatography Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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 - PBAP

**Reviewer Name:** Tim Arnold

**LRC Date:** 9/20/2024

**Laboratory Job Number:** 242753

**Prep Batch Number(s):** QC2409110

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	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	<i>Sandra Williams</i>	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:** 242753  
**Prep Batch Number(s):** QC2409104

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
R1	O, I	<b>Chain-of-custody (COC)</b>		
	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	<b>Sample and quality control (QC) identification</b>		
	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	<b>Test reports</b>		
	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	<b>Surrogate recovery data</b>		
	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	<b>Test reports/summary forms for blank samples</b>		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

## TDS Laboratory Review Checklist

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
	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	<b>Laboratory control samples (LCS):</b>		
	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	<b>Matrix spike (MS) and matrix spike duplicate (MSD) data</b>		
	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	<b>Analytical duplicate data</b>		
	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	<b>Method quantitation limits (MQLs):</b>		
	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	<b>Other problems/anomalies</b>		
	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:** 242753  
**Prep Batch Number(s):** QC2409104

Item <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S1	O, I	<b>Initial calibration (ICAL)</b>		
	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	<b>Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):</b>		
	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	<b>Mass spectral tuning:</b>		
	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	<b>Internal standards (IS):</b>		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	<b>Raw data (NELAC section 1 appendix A glossary, and section 5.)</b>		
	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 <sup>1</sup>	Analytes <sup>2</sup>	Description	Result (Yes, No, NA, NR) <sup>3</sup>	Exception Report No. <sup>4</sup>
S6	O	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	O	<b>Tentatively identified compounds (TICs):</b>		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	<b>Interference Check Sample (ICS) results:</b>		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	<b>Serial dilutions, post digestion spikes, and method of standard additions</b>		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	<b>Method detection limit (MDL) studies</b>		
	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	<b>Proficiency test reports:</b>		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	<b>Standards documentation</b>		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	<b>Compound/analyte identification procedures</b>		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	<b>Demonstration of analyst competency (DOC)</b>		
	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	<b>Verification/validation documentation for methods (NELAC Chap 5n 5)</b>		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	<b>Laboratory standard operating procedures (SOPs):</b>		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	



